

THE ALUMINUM WORLD, THE BRASS FOUNDER AND FINISHER, THE ELECTRO-PLATERS REVIEW COPPER AND BRASS A TRADE JOURNAL RELATING TO METALS AND ALLOYS

OLD SERIES VOL. 17. No. 6. NEW YORK, JUNE, 1911.

NEW SERIES

THE PITTSBURG CONVENTION OF FOUNDRYMEN AND MANUFACTURERS MAY 22-27, 1911

A DETAILED DESCRIPTION OF THE MEETINGS OF THE ALLIED FOUNDRYMEN'S ASSOCIATIONS IN CONNECTION WITH THE EXHIBIT OF THE FOUNDRY AND MACHINE EXHIBITION COMPANY.

When the doors of the buildings of the Western Pennsylvania Exposition Society at Pittsburg, Pa., were thrown open Tuesday evening, May 23, 1911, visitors were surprised to find a complete exhibition of foundry machinery, devices and supplies in full sway. Despite the gloomy predictions of some overpessimistic manufacturers with the present bad state of business in front of them, the exhibition was a complete success in every way, financial, social and educational. The exhibition was held by the Foundry and Machine Exhibition Company, an incorporated body, which succeeded last November the Foundry and Manufacturers' Supply Association. The officers and directors of the exhibition company are as follows:

George R. Rayner, president, The Carborundum Co., Niagara Falls, N. Y.; E. H. Morgan, vice-president, Arcade Mfg. Co., Freeport, Ill.; J. S. McCormick, treasurer, J. S. McCormick Co., Pittsburg, Pa.; C. E. Hoyt, secretary, Lewis Institute, Chicago, Ill. Directors: Wilfred Lewis, The Tabor Mfg. Co., Philadelphia, Pa.; H. R. Atwater, The Osborn Mfg. Co., Cleveland, Ohio; F. N. Perkins, Arcade Mfg. Co., Freeport, Ill.; E. H. Mumford, Mumford Molding Machine Co., New York City, N. Y.; H. T. Frauenheim, Herman Pneumatic Machine Co., Pittsburg, Pa.; R. S. Buch, A. Buch's Sons Co., Elizabethtown, Pa.; Edward A. Pridmore, International Molding Machine Co., Chicago, Ill.; W. Campbell, The Cleveland, Wire Spring Co., Cleveland, Ohio; Henry A. Pridmore, Henry E. Pridmore, Chicago, Ill.

The number of exhibitors holding space was 110, and the aggregate cost in assembling the great display was \$280,000. It is not known that a greater display of machinery both in operation and still, devoted to one industry was ever gotten together before in any one Any one who visited the exhibition held in Cincinnati in 1909 and this one could not fail to notice a difference in the class of visitors. At Cincinnati the souvenir hunter was largely in evidence. At Pittsburg practically all the visitors had some serious object in view; either to purchase equipment, get information regarding improvements in certain lines of machinery, or to learn of new methods and devices incidental to the branch of the industry that each one was interested in. The Exhibition Company voted after the Cincinnati meeting to dispense with souvenirs, and this action eliminated a certain class of visitors that brought no business but consumed just as much time on the part of the exhibitor as the bona fide customer. This year the visitor was requested, if interested, to leave name and address, and a souvenir would be mailed, thus insuring that the trinket would get safely into the hands of those for whom it was intended.

An idea of the material success of the exhibition in a business sense can be gathered from the opinions collected and published at the end of this article. The question of a permanent place for the exhibition was raised again this year, and, judging from the opinions voiced by the exhibitors did not meet with anything like popular favor. The list of machines, devices, appliances, etc., show included everything that has any bearing on the foundry. This list was published in the May number of The Metal Industry, and is repeated at the end of this article, together with the names of the exhibitors. A number of the machines shown at the 1911 exhibition for the first time are specially described in the "Industrial" department of this issue and the reader is advised to look them over as there is bound to be some device that will interest everyone.

THE ASSOCIATIONS.

The American Foundrymen's Association met this year in Pittsburg for their sixteenth convention. With them met the American Brass Founders' Association for their sixth meeting. Also there was the Associated Foundry Foremen, and with the combined attendance the total registration was up to Friday morning, May 26, 1875. This, together with late comers unregistered visitors, brought the total up to probably around 3,000, which was not quite up to the mark set at Detroit in 1910. The hot weather and bad business conditions were given as possible reasons for the falling off. In spite of the smaller number in attendance the business done seems to have been larger in the aggregate. One manufacturer was heard to say that while he had fewer names on his order book than at Detroit, the total sales was much larger this year.

THE SESSIONS.

The first session of the convention was a joint one and was held in the Theatorium of the main hall at ten o'clock Tuesday morning, May 23, with Major Joseph T. Speer, of the Pittsburg Valve Foundry and Construction Company, president of the American Foundrymen's Association, presiding.

- Major Speer introduced J. S. Seaman, president of the Pittsburg Foundrymen's Association, who, on behalf of the local organization, welcomed the visitors most heartily to the Steel City.

president of the Pittsburg Chamber of Commerce,

H. M. Irons, assistant city solicitor, representing Mayor William A. Magee, and W. H. Stevenson, vice-

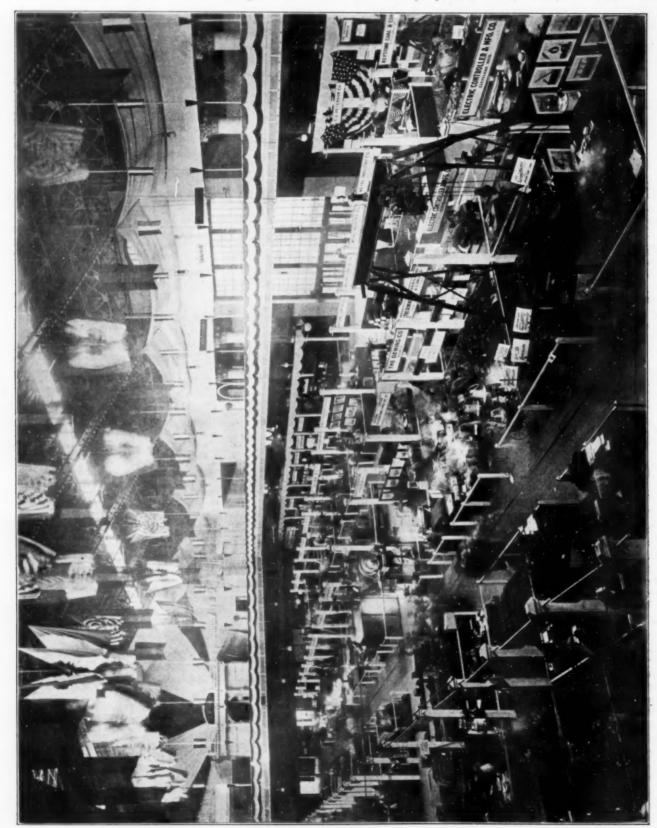
followed Mr. Seaman with felicitations of welcome. These were responded to by Alfred E. Howell, Nashville, Tenn., one of the vice-presidents of the American Foundrymen's Association.

Major Speer followed with a brief address, in which he reviewed the progress of the foundry industry from the days when the rule of thumb methods prevailed to the present scientific methods of melting metals and

making castings, for which advancement, he added, most credit was due to the work of the American Foundrymen's Associations

Foundrymen's Associations.

Nathaniel K. B. Patch, president of the American Brass Founders' Association, who was unable to be present at the opening meeting, sent in his presidential address which was read by L. W. Olsen, of the Ohio Brass Company, Mansfield, Ohio, the senior vice-



PITTSBURG EXHIBITION OF FOUNDRY SUPPLIES.-VIEW OF MAIN CONVENTI ON HALL, LOCKING WEST, SHOWING BOOTHS.

president of the association. President Patch said that one of the principal achievements of his association for the year was the appointment of an official chemist. The organization will receive from this official each year a paper on any subject of interest to the association, designated by the executive committee, the research work and experiments to be conducted by him. This official is Arthur D. Little, Inc., Boston, Mass. The association will also receive annually from Mr. Little's firm a report reviewing the developments for the year in the non-ferrous metal industry, and he further agrees to furnish members with analyses of non-ferrous metals at a nominal charge.

SECRETARY'S REPORT.

Secretary William M. Corse, of the Lumen Bearing Company, Buffalo, N. Y., said in his report that there was a net gain in membership of 5½ per cent. since the Detroit convention in 1910. The present membership is 287. He also called attention to the monthly Bulletin issued by the organization, which, in addition to publishing association news, also carried abstracts from the American Chemical Society Journal. No particular progress was reported in the work of the standardization committee, which had been delayed by the press of work at the Bureau of Standards; but tangible results were hoped for this coming year. There was cash on hand in the treasury of \$94.88, after disbursements during the year of \$1,386.59.

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Before adjournment, Dr. Moldenke called the attention of the association to the recent deaths of W. W. Sly, president of the W. W. Sly Manufacturing Company, Cleveland, and A. N. Spencer, vice-president of the Oliver Machinery Company, Grand Rapids, both of whom had made arrangements to attend the convention this year as usual. On motion of Henry M. Lane, Cleveland, seconded by A. W. White, London, Canada, the president was instructed to appoint a committee of three to draft resolutions of condolence and regard, copies to be sent to the bereaved families and to be spread upon the minutes of the organization.

An obituary notice of Mr. Sly will be found in the "Personal" department of this issue of The Metal Industry.

AMERICAN BRASS FOUNDERS' ASSOCIATION MEETINGS.

The first session of this association was an independent one and was held Tuesday afternoon, with Vice-President L. W. Olsen presiding. The first paper read was by J. R. Huber, of Buffalo, N. Y., on "The Analysis of Manganese Bronze." In the discussion which followed and participated in by Messrs. Olsen, Webster and Corse it developed that chemical analysis of manganese bronze could be taken as an index of its physical character only when all conditions are the same when making the bronze. In answering a question as to the effect of rapid cooling on manganese bronze, Secretary Corse remarked that some people believed a difference of 50 per cent. in strength existed between chill and sand castings, which was erroneous. The tensile strength of a chill casting might be 80,000 pounds per square inch, as against 75,000 pounds from the same alloy cast in sand.

At the second session held Wednesday afternoon with President Patch in the chair, a paper was read by William Vaughan, Boston, Mass., on "The Corrosion of Brass Foundry Products." This paper was elaborately illustrated by means of a large chart. This paper was followed by a paper on "Efficiencies of Furnaces," by Prof. J. W. Richards, of Lehigh University, South Bethlehem, Pa. The paper gave a resumé of

the ratios of fuel consumption to output and cited a number of examples. In discussion, Mr. Webster, of Bridgeport, Conn., said that he had found in melting brass with anthracite coal the ratio was roughly $2\frac{1}{2}$ to 3 pounds of coal per pound of metal melted in a pit fire. Mr. Corse said the average for coke as fuel in a pit fire was 45 pounds of coke to 100 pounds of metal. Mr. McKimmon said that in a Steele-Harvey furnace he had melted 900,000 pounds bronze for light castings at an average consumption of $3\frac{3}{4}$ gallons of oil per 100 pounds of metal. The metal charged was one ninth borings, and the loss in melting and subsequent grinding was 4.6 per cent. The cost of the oil averaged 18 cents for $4\frac{1}{2}$ gallons. It was stated also in the discussion by J. N. Smith, of the New York Air Brake Company, Watertown, New York, that the fuel consumption in a Charlier furnace averaged 3 gallons of oil per 100 pounds of metal at a cost of 15 cents.

A paper read by H. W. Gillet, Aluminum Castings Company, Detroit, Mich., on "The Pyrometer and the Aluminum Foundry," caused considerable discussion, the gist of which showed that for successful work in aluminum with the pyrometer the thermo-electric couple should be free from any covering and must be used bare in the metal. This paper was followed by one by C. P. Karr, of the Walworth Manufacturing Company, South Boston, Mass., on "Pouring and melting Points of Some High-Grade Bronzes." This paper is published in full in this issue. The discussion which followed the reading of the paper developed the fact that while the pouring temperatures recorded were obtained in the foundry and represented actual practice, the melting points had been determined in the laboratory and therefore no absolute references could be drawn. The last paper of the afternoon was by E. A. Barnes, of The Fort Wayne Electric Works, Fort Wayne, Ind., and was on "Non-Ferrous Foundry Economics and Refinements." This paper was illustrated by means of photographs of a number of new machines recently added to the foundry of his company, and stated that by reason of the many conveniences afforded they were able to get employees of the very highest ability.

The Friday morning session of the American Brass Founders' Association was devoted to papers by Prof. S. W. Parr, of the University of Illinois, on "The Determination of Nickel in Alloy," and the paper by Jesse L. Jones on "The Effect of Repeated Melting on Manganese Bronze," which was illustrated by means of diagrams showing the tensile stress of the samples tested. This paper will be found in this number of The Metal Industry.

ELECTION OF OFFICERS.

A committee appointed to nominate officers for the association for the coming year consisting of W. R. Webster, chairman; J. L. Jones, W. L. Abate, L. J. Kasjens and F. W. Reidenbach, brought in a ticket which was unanimously elected, as follows:

President, L. W. Olson, Ohio Brass Company, Mansfield, Ohio. Secretary, W. M. Corse, Lumen Bearing Company, Buffalo, N. Y.

Vice-presidents: New Jersey district, John F. Thompson, Orford Copper Company; New York district, R. T. Roberts, National Brass & Copper Tube Company, Hastings-on-Hudson, N. Y.; New England district, P. T. Augenbraun, Yale & Towne Manufacturing Company, Stamford, Conn.; Pennsylvania district, G. H. Clamer, Ajax Metal Company, Philadelphia, Pa.; Illinois district, Phillip Mueller, H. Mueller Manufacturing Company, Decatur, Ill.; Chicago and Northwest, R. C. Faunt, Faunt Brothers, Chicago; Michigan, Ohio and Indiana, H. W. Gillett, Aluminum Casting Company, Detroit; Virginia and the South-

west, John C. Sharp, Sharp Brass Works, Chattanooga, Tenn.; Ontario and the Western Provinces, N. K. B. Patch, Lumen Bearing Company, Toronto, Ont.; Quebec and the Maritime Provinces, R. R. Mitchell, Robert Mitchell Company, Ltd., Montreal, Que.

THE ASSOCIATED FOUNDRY FOREMEN.

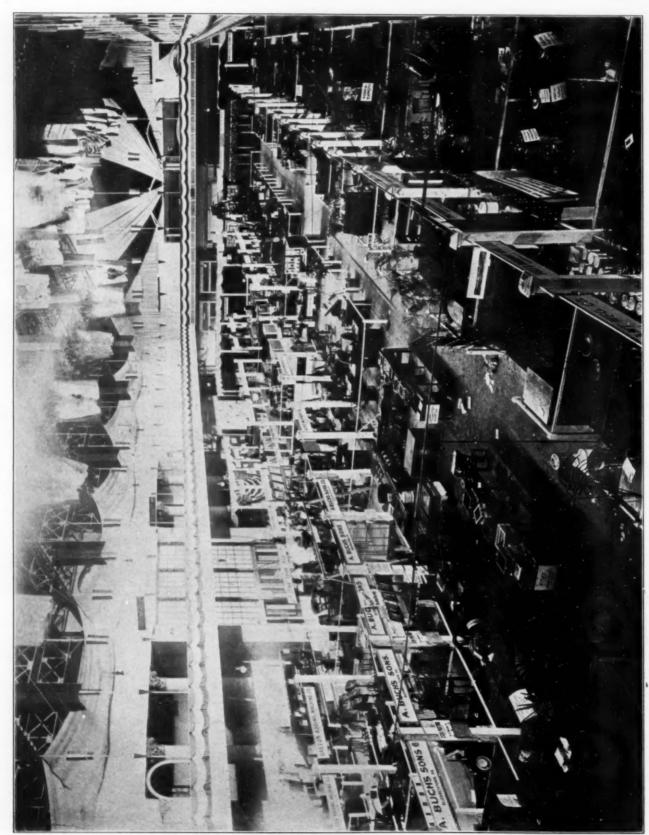
At the annual meeting of the Associated Foundry

Foremen, held contemporaneously with the other foundrymen's meetings, the following officers were elected:

President, Robert B. Thompson, Buffalo-Pitts Company, Buffalo, N. Y.

Vice-President, Wm. H. Woods, Pennsylvania Railroad, Altoona, Pa.

Secretary, Hugh McPhee, Tarrytown, N. Y.



CONVENTION HALL, LOOKING EAST, SHOWING BOOTHS. PITTSBURG EXHIBITION OF FOUNDRY SUPPLIES-VIEW OF MAIN

A banquet was tendered the visiting foundry foremen by the Pittsbury Foundry Foremen's Association at the Fort Pitt Hotel Wednesday evening. Professor C. B. Connelly, of the Carnegie Technical Schools, presided as toastmaster. The address of welcome was delivered by W. H. Wood, president of the Pittsburg Association, and replied to by Robert Thompson, of Buffalo, president of the Associated Foundry Foremen.

Secretary Hugh McPhee, of the Associated Foundry Foremen, told of the progress of the association during the year, saying that the Pittsburg Association, although but one year old, was now numerically stronger than any of the other branches and urged upon local members the benefits to be derived from attendance at meetings and close attention to the educational papers presented.

AMERICAN FOUNDRYMEN'S ASSOCIATION.

The election of officers of the American Foundrymen's Association occurred at the Friday morning session. In the Thursday morning session, President Speer had appointed the following committee on nominations: W. H. McFadden, Pittsburg, chairman; L. L. Anthes, Anthes Foundry Company, Toronto; A. T. Waterfall, Russell Wheel & Foundry Company, Detroit; E. H. Mumford, Mumford Molding Machine Company, New York, and A. E. Howell, Phillips & Butorff Manufacturing Company, Nashville, Tenn. At the same time he appointed as auditing committee: William Yagle, Lawrence Iron & Steel Foundry Company, Pittsburg, and W. A. Bole, Westinghouse Machine Company, Pittsburg.

The report of the nominating committee was unanimously adopted and the following are the officers:

President, Major J. T. Speer, Pittsburg Valve, Foundry & Construction Company, Pittsburg, Pa. Secretary-treasurer, Richard Moldenke, Watchung, N. J., who now enters upon his eleventh term. Vice-President, first district, F. B. Farnsworth, New Haven, Conn. Vice-president, second district, W. D. Miles, Buffalo Foundry & Machine Company, Buffalo, N. Y. Vice-president, third district, Walter Wood, R. D. Wood & Co., Philadelphia, Pa. Vice-president, fourth district, Alfred E. Howell, Phillips & Buttorff Manufacturing Company, Nashville, Tenn. Vice-president, fifth district, R. E. Bull, Granite City, Ill. Vice-president, sixth district, T. W. Sheriff, Sheriff Manufacturing Company, Milwaukee, Wis. Vice-president, seventh district, D. R. Lombard, Lombard Iron Works & Supply Company, Augusta, Ga. Vice-president, eighth district, S. B. Chadsey, Massey-Harris Company, Toronto, Ont.

EXCURSIONS AND ENTERTAINMENTS.

Thursday afternoon was given up to a visit made to the Westinghouse Air Brake Company's plant at Wilmerding, Pa., the Carnegie Steel Company's plant at Homestead, Pa., where were seen the operation of open hearth steel furnaces, the forging of ingots into plate, the making of slabs, blooms and billets from ingots taken from soaking pits and the rolling of structural shapes, as well as the armor plate department where steel plate as thick as 18 inches for use at the Panama Canal was being treated.

At the Mesta Machine Works at West Homestead, Pa., was shown a large casting taking metal from three furnaces and the casting of the half of a 20-foot blowing engine wheel, weighing, for the half, 28,000 pounds. The large casting was 39 feet 4 inches long, 52 inches in diameter, had 8-inch walls and weighed 185,000 pounds. For cutting the steel risers an equipment of the oxy-acetylene blow pipe has been provided by the Linde Air Products Company, Buffalo, N. Y.

The entertainment also provided automobile rides about the city for the ladies, a vaudeville performance of excellent character on Thursday evening. A chance

was given for all to attend a National League baseball game at Million Dollar Forbes Field on Friday afternoon, when the "fans" saw Pittsburg go down in defeat before the Cincinnati "Red Sox" to the tune of 4 to 3.

The festivities came to a close with a subscription banquet at the Fort Pitt Hotel Friday evening.

BUFFALO FOR 1912.

At the last meeting of the American Foundrymen's Association it was decided to hold the convention for 1912 in Buffalo. This means that the other associations, viz., the American Brass Founders' Association and the Associated Foundry Foremen will also hold their conventions in that city. As the Foundry & Machine Exhibition Company does not hold a meeting until next fall it cannot be said with absolute certainty that the exhibition will be held in Buffalo, but it is reasonably sure that this company will follow the lead of the associations in selecting the convention city.

The Buffalo officials who had in charge the booming of the city for the 1912 convention are particularly elated by their success, as the convention was finally landed through the strenuous efforts of F. M. Tracy, chairman of the Commerce Convention Committee, in the face of sixteen invitations, and also against the strong opposition of Chicago, Milwaukee and St. Louis. One of the many ingenious methods of booming the "Bison" city for 1912 was the employment of badges and signs bearing the emblem of a buffalo, which were scattered broadcast. Every visitor to the



THE "BUFFALO BOOM BUTTON."

exhibition was immediately decorated with a button, a cut of which is here shown, and literature with all sorts of catch phrases was displayed at all booths, together with placards which were seen everywhere.

As it is expected that there will be an attendance of at least six thousand visitors at the next convention, it will tax the ability of the city to its utmost to provide for the huge exhibition. To accommodate the organizations and give them proper convention facilities it is proposed to use the old Broadway Arsenal, and the vacant lots surrounding the buildings, which will give a total exhibition floor area of 168,000 square feet. In addition to this it will be necessary to use the city convention hall for the regular conventions of the association and social gatherings. The local workers who have been active for the past three months to secure the convention for Buffalo include Robert B. Thompson, president of the Associated Foundry Foremen and president of the Buffalo Foundry Foremen's Association; Henry D. Miles, William H. Barr, T. L. Richmond, Henry W. Wendt, Walter F. Semon, W. M. Corse and George R. Rayner. Dr. Richard Moldenke, secretary of the American Foundrymen's Association, was also very active in favoring Buffalo.



THE PITTSBURG EXHIBITION OF FOUNDRY APPLIANCES VIEW OF MACHINERY HALL WHERE THE MOVING EXHIBITS WERE HOUSED, LOOKING SOUTH.



VIEW OF MACHINERY HALL, LOOKING WEST.

LIST OF EXHIBITORS, WHAT THEY EXHIBITED AND WHAT THEY HAVE TO SAY ABOUT THE EXHIBITION.

Following its usual custom, THE METAL INDUSTRY this year prints the list of exhibitors, what they exhibited, and what they have to say about the exhibition. The subjects in mind this year were somewhat similar to those of 1910 —the question of whether or not the various associations and the exhibition company shall select a permanent meeting place and exhibition hall, or whether they will visit a different city each year, were still the topics under discussion. Both ways have their advantages. attendance of visitors from different sections of the country is generally secured by visiting a new place each year, while, on the other hand, the selection of a suitable exhibition hall and the shipment and installation of the different exhibits is bound to be more difficult each year. The question may be settled in the end by choosing a permanent place for the convention every other year; the alternative year being spent in a different section of the

In the meantime, in order to get an expression of opinion, THE METAL INDUSTRY has asked the following questions of the officers and exhibitors of the Exhibition Company and the presidents and secretaries of the different associations. The questions were:

What do you think of the convention? (2)What city is your choice for next year?

(3) Have you changed your opinion from last year on having a permanent exhibition place? If so, which place do you prefer?

The following are the answers:

OPINIONS OF THE OFFICERS.

GEORGE R. RAYNER, PRESIDENT, THE FOUNDRY AND MACHINE EXHIBITION COMPANY: "The convention is a big success without a doubt. I think the Entertainment Committee showed sense in cutting out the unnecessary features which have grown to be so expensive of late years. Most of the entertainment was for the ladies, which was right. Let the men work and women play. I hope that next year the Entertainment Committee will do likewise and even make more progress in this direction of providing suitable entertainment and the most of it for the ladies. Buffalo or Chicago will suit me for 1912. Regarding a permanent place, you know my views, which are Niagara first, last and always.'

E. H. MORGAN, VICE-PRESIDENT, THE FOUNDRY AND MACHINE EXHIBITION COMPANY: "I have only attended a few conventions and so am not in a position to say very much. However, I think Chicago should be the city selected for next year. more foundries in Chicago and vicinity and the buildings there are more suitable for exhibition purposes. I do not believe in a permanent exhibition place. Of course, going to a new city each year adds to the expense, but there is something new every

J. S. McCormick, Treasurer, The Foundry and Machine EXHIBITION COMPANY: "What do I think of the convention? The increase in the exhibitors speaks for itself. There were 68 at Cincinnati, 82 at Detroit and 120 exhibitors in Pittsburg. Buffalo is a nice city for next year, has good halls, everything we need. A permanent exhibition place is not practical just yet, but we may have to come to it later on."

E. HOYT, SECRETARY, THE FOUNDRY AND MACHINE EXHIBI-TION COMPANY: "A decided advance has been made this year in the quality and quantity of the exhibits. Great care was taken in selecting the exhibits and exhibitors and despite this careful selection we have handled 59 more than we ever did before. Buffalo, the far East or far West would suit me for next year. After a few more years when we have exhibited in different parts of the country more thoroughly, we may find it advisable to settle down in one place. It is becoming a greater problem every year to find the right-sized buildings in the right-placed city.'

F. N. PERKINS, CHAIRMAN EXECUTIVE BOARD, THE FOUNDRY AND MACHINE EXHIBITION COMPANY: "This exhibition is better than anything we have had and exhibitors who expect to show

their products next year had better apply early for space. Buffalo, Rochester, Chicago or Milwaukee is my choice for 1912. I believe in a permanent exhibition place, my choice being Cleveland, Buffalo or Detroit and my idea of working out such a plan is to put the surplus (if any) each year aside into a fund that will eventually be large enough for the erection of our own building. We could then control such an exhibition hall and when not in use by our company, lease to other societies, but the building should be built and controlled by us that it may be entirely suitable for our purpose."

WILFRED LEWIS, DIRECTOR OF THE FOUNDRY MACHINE AND

EXHIBITION COMPANY, said:

"The convention just held in Pittsburg was disappointing in the attendance and interest shown, although it was without doubt one of the finest exhibits that has yet been made, and we cannot complain of the business transacted. We believe, however, that these conventions come around pretty often and faster than the general interest in them can be developed. We would prefer to have no convention next year, and let it go to Buffalo, Chicago, Milwaukee, or any other city that wants it badly, in 1913. We have not changed our opinion in regard to a permanent exhibition and do not believe in having one anywhere. Permanent exhibitions are like cemeteries and arouse interest chiefly when the exhibits are planted. I believe conventions are good things at the right time and in the right place, but I am very sure they can easily be overdone, and that an exhibit every two years would be quite enough."

ASSOCIATION OFFICERS' OPINIONS.

RICHARD MOLDENKE, SECRETARY, AMERICAN FOUNDRYMEN'S Association.—"All agreed that the Convention was a huge success. Buffalo has been decided upon by the A. F. A. for next year, and we never select a city but what is capable of taking care of the Exhibition Company. If, in the future, everyone agrees that it is best to select a permanent place entirely apart from foundry centers, such as Atlantic City, I believe the foundrymen will not stand in the way of such a selection."

W. M. Corse, Secretary, American Brass Founders' Associ-"I think that the Convention this year was the best ATION, said: that has been held so far, particularly with reference to the cooperation that has been shown between the American Foundrymen's Association, the American Brass Founders' Association and the supply people. The Pittsburg local committee has done a good deal for our work in general, by creating a more friendly feeling between the interests of all. In answer to question 2, I would say that Buffalo is my choice for next year. Relative to question 3, I am not in a position to give an intelligent answer."

ROBERT B. THOMSON, PRESIDENT, ASSOCIATED FOUNDRY FORE-MEN, expressed the opinion that "The Convention just ended was the best I have attended. Buffalo, by all means, for 1912. My opinion has not changed regarding an exhibition place. I have believed that the exhibition should not be permanent. There is just as much benefit to be derived from visiting the plants in different cities, as there is in going to the exhibit and you could not expect a firm to send men to a permanent place year after year, as they now do when the Convention is held in different places."

HUGH McPHEE, SECRETARY, ASSOCIATED FOUNDRY FOREMEN.-"I believe that the mechanism relating to the foundry arts was shown in better shape at Pittsburg than ever before. Buffalo is my choice for 1912. I do not see how we can locate in any one place, because it would cause jealousy. We must move around from year to year."

OPINIONS OF THE EXHIBITORS.

THE ADAMS COMPANY, DUBUQUE, IOWA.

Molding machines, squeezers, snap flasks, pneumatic rappers, spruce cutters, grinding stands, milling machines, automatic gear hobbing machines

Represented by C. E. Reich, W. J. Spensley, John Nicol, Ignatius Schweitering, John Berringer, Anton Haas, L. E. Marceau and Glenn Muffly, sales manager.

Space 23, Section H. "We think the exhibit has been a fine one and all of us think well of the results," said Mr. Nicol. "I do not favor a permanent exhibit city because all portions of the country could not attend any one section but by spreading over many sections it will reach the larger number. I favor the West for the next exhibit as that point has not been visited for some time. ALBANY SAND AND SUPPLY COMPANY, ALBANY, N. Y.

Samples of selected grades of sand for brass, aluminum and stove plate castings.

Represented by L. Murray, manager, Charles H. Bird and Arthur T. Palmer.

Space 73, Section R. "The Pittsburg exhibit was the best that has ever been given, and I am pleased with it in every detail. I do not favor a permanent location and would like to see the next convention meet in Boston," said Mr. Murray.

AMERICAN METAL MARKET COMPANY, NEW YORK, N. Y. AND PITTSBURG, PA.

Represented by B. E. V. Luty.

Space 76. Section R.

Represented by E. H. Morgan, Chas. Morgan, L. L. Munn, F. N. Perkins, R. M. Burton, W. C. Norcross, Henry Tscherning, G. D. Wolfley, Aug. Christen, John Ludolph, Joe Stevens and H. Damman. Space 90, Annex.

Opinions of two members of this corporation published above.

ATLAS CAR AND MANUFACTURING COMPANY, CLEVELAND, OHIO. Storage battery locomotive, new type sand blast car, portable track and side dump sand car.

Represented by R. S. Richards.

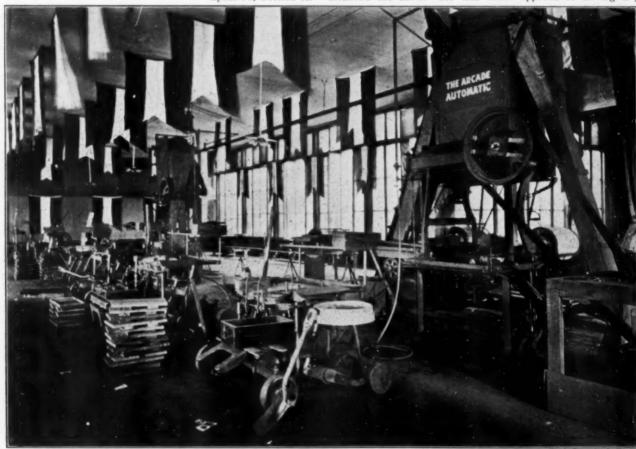
"I think the exhibit in Pittsburg was fine, but am much disappointed at the size of the crowds. I am not in favor of a permanent exhibit city, but rather favor holding it at different points so as to have other cities enter largely into the displays." was the opinion of Mr. Richards, who expressed himself as having enjoyed the Pittsburg meeting immensely.

BAIRD & WEST, DETROIT, MICH.

Solvay foundry coke. Joint exhibit with Pickands, Brown & Co.

Space 4, Section A.

Mr. Baird thinks that the exhibit in Pittsburg was fine, and its location admirable and he liked the way in which the people He was much opposed to having a perattended the show.



PITTSBURG EXHIBITION OF FOUNDRY SUPPLIES-VIEW OF THE ARCADE MANUFACTURING COMPANY'S EXHIBIT

AMERICAN VANADIUM COMPANY, PITTSBURG, PA.

Vanadium steel and cast iron specimens.

Represented by J. J. Flannery, president; George L. Norris, met. engr.; C. L. Hastings and W. J. Bird.

Space 67, Section N.

Mr. Bird spoke highly of the exhibit and expressed himself as pleased with every feature of the convention. "I am not in favor of a permanent location," he said, "and I think that they ought to be spread over a wide territory."

ARCADE MANUFACTURING COMPANY, FREEPORT, ILL.

Norcross jarring machines, modern molding machines, Arcade squeezers, Arcade rotary sand sifter, perfect match plate hinge, and the modern automatic molding machine with sand elevator and dropper.

manent location for exhibits and prefers moving about the country and increasing the interest of exhibits and the public alike.

JONATHAN BARTLEY CRUCIBLE COMPANY, TRENTON, N. J.

Crucibles, retorts, stoppers and a variety of graphite spe-

Represented by Samuel H. Dougherty, Lee T. Ward, Herbert D. Cole and Lewis L. Lawton, secretary.

Space 89, Section S.

Lee T. Ward, in discussing the exhibit, said: "The exhibit this year is a fine one and I believe it can be called successful in all respects. I do not favor having any permanent locality for holding exhibits. Personally, I like the West for holding these conventions and exhibits.'

Officers of Two of the Participating Associations



C. E. HOYT, Secretary Foundry and Machine Exhibition Company.



GEORGE R. RAYNER, President Foundry and Machine Exhibition Company.



J. S. McCORMICK, Treasurer Foundry and Machine Exhibition Company.



E. H. MORGAN, Vice-President Foundry and Machine Exhi-bition Company.



L. W. OLSEN.
President American Brass Founders'
Association.



G. H. CLAMER. Vice-President Pennsylvania District Amer-ican Brass Founders' Association.



WM. M. CORSE, Secretary-Treasurer American Brass Founders' Association.



PHILIP MUELLER, Vice-President for Illinois, except Chicago District, American Brass Founders' Association.

BERKSHIRE MANUFACTURING COMPANY, CLEVELAND, OHIO.

Hand squeezing and pattern drawing molding machines, plain squeezers and automatic molding machines. Also a full line of snap flasks, iron flasks, etc.

Represented by R. H. York, J. N. Battenfeld and C. F. Battenfeld.

Space 102, Section B, Mechanical Hall.

CHARLES H. BESLY & COMPANY, CHICAGO, ILL.

Besly's pattern makers' disc grinder for wood, and Besly direct connected motor driven grinder for metal, Helmet pressed steel ring wheel chucks, geared lever feed tables. rotary fixture, Helmet temper taps, Helmet oil, Helmet spiral

circles, Helmet cement and Helmet glue. Represented by Charles A. Knill, William H. Allen, Edward P. Welles and John Miller, Jr.

Space 47. Section I.

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BROWN SPECIALTY MACHINERY COMPANY, CHICAGO, ILL.

Hammer core machine and Style C hammer core machine. Represented by Elmer A. Rich, Jr., and John Laycock.

Spaces 5 and 6, Section D.

Mr. Laycock said: "I have a very good opinion of the manufacturers of the Pittsburg district because they have shown such a deep interest in the exhibit this year. This is one of the most pleasing features of the Pittsburg meeting. I like the idea of changing from city to city for the annual convention and

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Combination jar and squeeze molding machines, patented

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MAJOR J. T. SPEER, Present President.

"I think very highly of the exhibit in Pittsburg," said Mr. Allen. "In fact it is one of the best I ever saw. I do not favor any permanent exhibit city, but would like to see the convention meet in Milwaukee in the near future."

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J. B. Nieman said: "This show is the best we have ever had, particularly in its general appearance. Chicago is the place for next year. The show has not been West and the majority of people that call at our booth are from the West. We have even had callers from Omaha and Minneapolis and other points in the far West. Chicago has the natural attraction and can handle crowds and has several exhibition halls. We like to move around each year, get in a different territory and this also gives the opportunity to visit the different shops.

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Two sizes core wiring straightening machines, dustproof, enclosed frame, splash lubricated air compressors, pneumatic sand riddles.

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DR. RICHARD MOLDENKE, Secretary-Treasurer.

aluminum snap flasks, square and tapered, patented steel flask bars, Buch's pattern cement, bottom boards, cast iron casings, cast iron flasks for the gravity machine with bot-

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Parting compounds, binders, blackings, brass fluxes and core compounds.

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Represented by George K. Rayner, W. W. Sanderson,

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Space 71, Section R.

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"H. S. Hunter said: "I think the exhibits in Pittsburg are the best ever shown. I do not think that exhibits should be held in any one city and am opposed to such an idea. I think that the far East should be visited some time."

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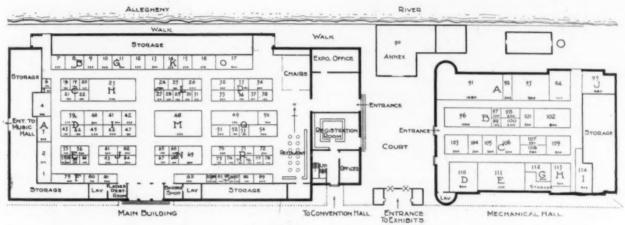
Space 70, Section R.

Deane Steam Pump Company, Holyoke, Mass. See George F. Blake Manufacturing Company

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Duquesne Way

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Steel tote boxes, steel foundry barrels, steel kegs, steel shelving, steel sprue boxes, coil wire springs.

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Core machines.

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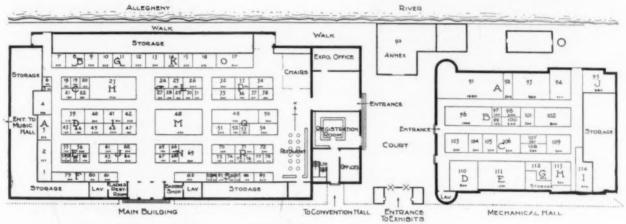
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JOSEPH DIXON CRUCIBLE COMPANY, JERSEY CITY, N. J.

Crucibles for both brass and steel melting, special shapes and formulas for various purposes, phosphorizors stirrers, skimmers, stoppers, nozzles, sleeves, etc. Graphite Refractories, foundry facings, motor brushes and graphite products.

Represented by Dudley A. Johnson, in charge; F. R. Brandon, John A. Condit and Frank Krug.

Space 38, Section P.

F. R. Brandon says: "I think that the present exhibit has been a fine one and has been attended by a most interesting crowd. I am in favor of going West for the next convention, possibly to St. Louis. I am not in favor of any permanent exhibit city. STANLEY DOGGETT, NEW YORK CITY, N. Y.

Foundry specialties, parting compounds, manganese dioxide, soapstone, graphite facing, facings powdered charcoal, dioxide of manganese flux, ferro-manganese, ferrosilicon, iron and steel cement, metal workers' soapstone,

crayons and pencils.

Represented by Stanley Doggett, Henry A. Roffmann and W. S. Rupert.

Space 80, Section F.

Henry A. Roffmann, of Stanley Doggett, New York: "This convention is certainly instructive and successful. I think all exhibitors were treated well in Pittsburg, better than ever be-The musical hall entertainment was much superior to the usual and we were happy in taking a lot of orders. Buffalo, I think, is the place for next year, for it has both the industrial and natural attractions. Niagara Falls is next door. We like to go to a new place every year."

ELECTRIC CONTROLLER AND MANUFACTURING COMPANY, CLEVE-LAND, OHIO.

Lifting magnets and controllers, automatic motor starters. Represented by J. S. McKee, J. F. Motz, H. W. Eastwood and C. E. Hanna.

Space 39, Section D.

ELMIRA FOUNDRY COMPANY, ELMIRA, N. Y.

Power ramming roll over core machines, patent pasting and venting devices.

Represented by A. M. Loudon, Thomas Jones and J. D. McCann.

Space 14, Section K.

FELT & TARRANT MANUFACTURING COMPANY, CHICAGO, ILL.

Comptometer adding and calculating machines. Represented by J. C. Nevins, S. C. Brown and W. D. Shimp.

Space 34, Section P.

THE FOUNDRY, CLEVELAND, OHIO.

Magazines and books.

Represented by John E. Penton, A. O. Backert, R. E. Densmore, W. A. Tenwinkel, J. C. Eppens, E. W. Word, H. A. Andresen and L. P. Sutter.

Space 35, Section P.

H. H. FRANKLIN MANUFACTURING COMPANY, SYRACUSE, N. Y. Die castings

Represented by H. V. Skinner.

Space 18, Section C.

Mr. Skinner says the exhibit has been a very successful one and he is well satisfied with the results. "I would rather have the next exhibit held in New Orleans, but am opposed to any permanent exhibit city.

HARBISON-WALKER REFRACTORIES COMPANY, PITTSBURG, PA. Ordinary shapes and standard cupola blocks in fire brick. Represented by Hay Walker, J. J. Brooks, Jr., K. Seaver, J. E. Morgan, W. N. McKnight, V. A. Giesey, G. S. Troxell and S. A. Bixler.

Space 65, Section N.

S. A. Bixler declared that the exhibit was one of the best that could be held and that much benefit was derived from all who exhibited. The idea of a permanent exhibit was not favorably received by him and it was not thought practical. Boston was considered a good city for the next exhibit.

HAUCK MANUFACTURING COMPANY, NEW YORK CITY, N. Y. Oil burning appliances, including cupola lighters, ladle heaters, core oven and furnace burners, mold dryers, preheating and brazing outfits.

Represented by A. E. Hauck, A. P. Link, A. H. Stein and H. E. Giersch.

Space 33, Section P.

Mr. A. H. Stein said: "The people seem to come freely to the exhibit in Pittsburg and seem to enjoy it and this certainly offers proof of the success of the exhibit as a whole. I like the selection of Buffalo for the next meeting."

HAWLEY DOWN DRAFT FURNACE COMPANY, CHICAGO, ILL.

Metal melting furnaces

Represented by F. O. Bartlett, H. J. Stow, D. J. O'Brien, H. E. Schwartz and C. M. Bleyer.

Space 32. Section P.

Mr. Eleyer says: "I have great hopes of seeing the exhibits in Chicago. The convention was a wonderful success.

HERMAN PNEUMATIC MACHINE COMPANY, ZELIENOPLE, PA.

Herman jar ram stripping plate machine, Herman jarring molding machines with roll-over and pattern drawing device, Herman jarring molding machine known as Bumper. Represented by A. M. Frauenheim, M. L. Heyl, Charles Herman, Alfred Herman, Andrew Rodgers and C. E. Pettee.

Space 93, Section A, Mechanical Hall.

Mr. Rodgers says: "This is the best convention and exhibit I ever saw and I think that the conventions should be shifted and travel about every year, doing away with the oneplace idea.

HERRUTH CORE OIL COMPANY, CHICAGO, ILL.

Small electric core oven and Herruth core oil, Represented by George A. Humelbaugh.

GARDNER MACHINE COMPANY, BELOIT, WIS.

Pattern makers' disc grinders, single head disc grinders. double head disc grinders, abrasive discs and disc grinders'

Represented by F. N. Gardner, F. E. Gardner and L. W. Thompson.

Space 8, Section B.

Space 58, Section E.

Mr. Thompson says: "The exhibit has been a great success in Pittsburg. I am in favor of going to Buffalo, of course, but am opposed to any permanent exhibit city."

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

GOLDSCHMIDT THERMIT COMPANY, NEW YORK, N. Y.

Full lire of metals produced free from carbon, Heating Thermit cans, Titanium Thermit Cans, Thermit welding process and appliances.

Represented by William C. Kuntz, E. A. Beck, H. S. Mann and William R. Hulbert.

Space 50, Section Q.

Mr. Kuntz: "The exhibits this year have been of an unusually fine line and the convention and general display has been very successful. I am personally in favor of a shifting of the exhibits from year to year to various leading cities of the country.

GRACETON COKE COMPANY, GRACETON, INDIANA COUNTY, PA. Foundry coke.

Represented by C. M. Lingle, general manager.

Space 22, Section C.

GRAF MOLDING DEVICE COMPANY, LOUISVILLE, KY. Aluminum roll-up match plates, hingeless snap flasks. Represented by T. H. Graf and A. N. Webb.

Space 20, Section C.

Mr. A. B. Webb says: "We are perfectly satisfied in every way with the way things have gone in Pittsburg. I am in favor of going West for the next convention."

HANNA ENGINEERING WORKS, CHICAGO, ILL.

Rathbone multiple molding machine, pneumatic shakers, oscillating riddle, riddler, sand blast machines, revolving dumping riddle, mold dryer and Hanna riveter.

Represented by W. L. Laib, James T. Lee and F. H.

Scantlebury.

Space 109, Section C, Mechanical Hall.

Mr. Lee says: "The exhibit in Pittsburg this year has been a great success. The machinery display is simply wonderful. I would like to see the next convention and exhibit held in Boston.

THE HILL & GRIFFITH COMPANY, CINCINNATI, OHIO. Represented by John Hill, John Glass, William Oberhelman and Harry Taylor.

Space 28, Section L.

Mr. Taylor says: "This has been the most successful gathering of exhibitors ever held and gratifying for all of us. I am in favor of going to some Eastern city for a meeting next time but am opposed to any permanent location for conventions.

HUNTER SAW & MACHINE COMPANY, PITTSBURG, PA.

Hunter solid tooth saws, Hunter inserted tooth saws and saw sharpening machines

Represented by F. A. Hunter, J. A. Carrothers and G. W.:

Space 86, Section S.

Mr. Hunter says: "The convention is great. The exhibits have been splendid and successful in every way. I favor Chicago for a meeting place in the future and rather hoped it would be the next time.'

IDEAL FURNACE COMPANY, CHESTER, PA. Brass melting furnaces. Represented by P. J. Sweeney.

Space 43, Section D.

"The present exhibit is and has been throughout a good one," said J. P. Sweeney. "I am in favor of a permanent exhibition city, but it should be located in a cool climate, and not where the temperature is as high as in Pittsburg at this season of the year."

INGERSOLL-RAND COMPANY, NEW YORK CITY, N. Y.
Twelve-inch stroke "NE-1" air compressor, pneumatic chipping, caulking and scaling hammers, pneumatic riveting hammers, sand rammers for bench and floor work, pneumatic motor hoists, pneumatic stationary motors, and pneumatic piston and rotary drills.

Represented by W. H. Armstrong, W. A. Armstrong, E. P. Mooney, H. E. Metcalf, W. B. Brendlinger, James Moran

Space 17, Section O.

Mr. Metcalf says: "I have had a fine time here and the exhibits are superb. I am strongly in favor of having the exhibits go to New York."

INTERNATIONAL MOLDING MACHINE COMPANY, CHICAGO, ILL.

Light and heavy designs of stripping plate machines, turn-over draw machines, core-making machines and

Represented by Edward A. Pridmore, W. W. Miller and

Space 16, Section K. W. W. Miller thinks well of the exhibits and says that for some reason the attendance has been disappointing in face of the show being the finest ever held. Somehow Pittsburg does not attend like other cities. "I would like to see the Far West get the next convention," he said in conclusion.

INTERSTATE SAND COMPANY, ZANESVILLE, OHIO. Molding sand for iron and steel molding. Represented by L. K. Brown and E. M. Ayers. Space 37, Section P.

"THE IRON AGE," NEW YORK CITY, N. Y. Represented by W. H Taylor, A. I. Findley, M. C. Robbins, Fritz Frank, D. C. Warren, W. B. Robinson, Robert A. Walker, Adrian Lazare and Geo. H. Griffiths.

Space 69, Section I. THE JAMES JILES COMPANY, PITTSBURG, PA. Molding loam and core sand. Common loam for open

Represented by John W. Jiles and C. L. Kelly

Space 19, Section C.

KEYSTONE COAL AND COKE COMPANY, PITTSBURG, PA. Coal and coke.

hearth furnaces, etc.

Represented by E. M. Gross, W. F. Elwood and A. F.

Space 56, Section E.

"I think the exhibit has been a fine one," said Mr. Elwood. "The show has been a beneficial one and I think highly of it as a whole. I am favorably impressed with the idea of having a permanent exhibition city for the future.

E. KILLING'S MOLDING MACHINE WORKS, DAVENPORT, IOWA. Stripping plate machine, roll-over machine, multiple cylinder plain jarring machine, jarring rock-over machine, two

sizes, automatic squeezer Represented by E. Killing, A. W. Fox, C. P. Aabye and George Heck.

Space 106, Section C, Mechanical Hall. Mr. Fox says: "The machine exhibits in Pittsburg are among the best I ever saw. I like Buffalo for the next meeting place.

LAWLOR IMPROVED JARRING MOLDING MACHINE COMPANY, PITTS-

Lawlor improved jarring molding machines. Represented by Ralph W. Hills, Robert Sweeney and J. J. Lawlor.

Space 113, Section G, Mechanical Hall. Mr. Sweeney said: "I think that the convention and the exhibit has been a splendid success. I would like to see the convention go to Philadelphia as the next meeting place.

DAVID LUPTON'S SONS COMPANY, PHILADELPHIA, PA.

Lupton steel sash for side walls, pond continuous sash for monitor and saw-tooth roofs. Lupton rolled steel skylight and photographs and drawings of designs for foundry and forge shops.

Represented by Clarke P. Pond, sales manager and W. C. Scott.

Space 36, Section P.

J. S. McCormick Company, Pittsburg, Pa.

One 5-ton and one 10-ton McCormick continuous sand screen and mixing machine, model cupola, general foundry supplies and facings.

Represented by J. S. McCormick, T. E. Malone, S. R. Costley and R. H. Mills.

Space 103, Section C, Mechanical Hall.

The opinion of J. S. McCormick will be found above. McCoy & Brandt, Pittsburg, Pa.

Motor starters and controllers manufactured by Allen-Bradley Company, Milwaukee, Wis. Represented by H. E. McCoy.

Space 81, Section S.

Mr. McCoy said: "I think the exhibit this year was a great success, the best ever held in all respects. I am very much opposed to having a permanent exhibit city, as it would soon cause interest to die out."

METAL INDUSTRY, THE, NEW YORK CITY, N. Y.

Magazines, books and pamphlets.

Represented by Palmer H. Langdon, Louis J. George W. Cooper, Thomas A. Trumbour, Edward B. Fritz and F. Wilkes.

Spaces 62 to 64, Section J.

MIDLAND MACHINE COMPANY, DETROIT, MICH.

Hand rammed roll-over molding machines, foot jolt core machines

Represented by George L. Grimes.

Mr. Grimes says: "I note the falling off in attendance at the exhibits, but aside from this the convention and the exhibit has been a fine success in every way and believe that it always will I am in favor of going from city to city in the future and not think of such a scheme of making any one place a per-manent meeting place."

MONARCH ENGINEERING AND MFG. COMPANY, BALTIMORE, MD. Latest improved furnaces using oil or gas as fuel for melting and heating, Acme core oven, steel foundry ladle, heating equipment, aluminum furnaces, Alls' "Eclipse" bolt heating furnaces, blowers, etc.

Represented by H. D. Harvey and David R. Steele. Space 108, Section C, Mechanical Hall.

Mr. Harvey says: "The exposition is one of the best I ever attended. I like the people who come and all seem to be deeply interested in the exhibits. I am glad that Buffalo got the next convention and am not in favor of any permanent annual convention or exhibit city.'

MORNER & SMITH, DAYTON, OHIO.

Patterns and aluminum snap flasks.

Represented by Louis Morner and Charles D. Smith.

Space 55, Section E.

Mr. Smith says: "The exhibit has been a very pleasing one. The machinery showing has been really wonderful. I am glad that the convention is going to Buffalo next time and am opposed to any idea of making one city a permanent convention and exhibit city. I think that it should move from city to city and reach the largest number of people possible.'

MOTCH & MERRYWEATHER MACHINERY COMPANY, CLEVELAND,

PITTSBURG, DETROIT AND CINCINNATI.

Representing the Bullard Machine Tool Co., Bridgeport, Conn.; Gould & Eberhardt, Newark, N. J.; Lapointe Machine Tool Company, Hudson, Mass.; Heald Machine Company, Worcester, Mass.; Ransom Manufacturing Company, Oshkosh, Wis.

Bullard vertical turret lathe, Gould & Eberhardt shaper, Gould & Eberhardt hobbing machine, Lapointe vertical key seater, Lapointe broaching machine, Heald American twist drill grinder, Ransom motor driven dry grinder.

Represented by E. P. Bullard, F. L. Eberhardt, G. E. Merryweather, E. C. Keener, J. P. Ransom and E. C. Batchelar.

Space 110, Section D, Mechanical Hall.

Mr. Ransom says: "We have had a very good time here and the crowds have been gratifying. Buffalo is my next choice for the convention but I do not approve of any one city having the convention all the time. It would cause a loss of interest.

MOTT SAND BLAST MANUFACTURING COMPANY, CHICAGO, ILL. Sand blast air compressor and painting apparatus.

Represented by David Mayer.

Space 7, Section A.

Mr. Murphy says: "I think the exhibits are a great success from every viewpoint but am disappointed over the small at-tendance. I am more favorably impressed with the machine plant exhibits, which are the best I ever saw. I am glad we go to Buffalo next year."

MUMFORD MOLDING MACHINE COMPANY, PLAINFIELD, N. J.

Jolt ramming molding machines, high trunnion squeezers, plain squeezers, split pattern machine, pneumatic hand trav-

Represented by E. H. Mumford, Carl Falk, E. M. Hug-

gins, F. W. Hamel and A. J. Goss.

Space 94, Section A, Mechanical Hall.

Mr. Falk says that the exhibits made in Pittsburg were among the finest but the crowds did not come and in this he was much disappointed. Buffalo is a good place for the next convention but perhaps not quite such an exhibit in itself as Pittsburg with her many industries. "Pittsburg is by far the best place to hold the convention and exhibit, but do not like the idea of having a permanent exhibit city anywhere."

NATIONAL CORE OIL COMPANY, BUFFALO, N. Y.

Cores and samples of various grades of oil. Represented by C. H. Cotton, P. L. Crandall, C. M. Anderson, J. J. McCarthy and B. J. Cummins.

Space 62, Section J. "The exhibit was in my opinion a gratifying success, and the

finest by far ever given. I am well satisfied with the selection of the next convention city, Buffalo, N. Y., but am not in favor of a permanent exhibit city at any time." This was the opinion expressed by B. J. Cummins, who was an active and pleased member of the exhibitors' crowd.

NORTHERN ENGINEERING WORKS, DETROIT, MICH.

Type E electric crane trolley

Joint exhibit with Cutler Hammer Manufacturing Company, Milwaukee, Wis.

Space 46, Section I.

Representatives of these companies think that the exhibit was a good one and the convention a success. They are not in favor of a permanent location for the exhibits but think that the conventions should go either further East, or West in the future.

NORTON COMPANY, WORCESTER, MASS. .

Grinding wheels, alundum and crystolon, abrasive materials, India oil stones, crystolon sharpening stones, Norton alundum refractories consisting of small electric furnace parts, cores, tubes, muffles, crucibles, combustion boats, filtering dishes, etc., for laboratory use.

Represented by George S. Welker and N. C. Hilton.

Space 11, Section G.

Mr. Welker says: "The exhibits have been fine. I have no complaint to make in any way. I would like to see the convention in Boston but do not want to see any permanent exhibit

S. OBERMAYER COMPANY, CINCINNATI, OHIO.

Branch Offices, Chicago, Pittsburg, St. Louis and Milwaukee.

Represented by E. D. Frohmann and S. T.

Space 31, Section L.

Mr. Johnston says: "The convention has been a grand suc-I have no complaints to make and have not been disappointed in any way; Buffalo suits me for the next convention, but I think that some Western city should have it after then."

OHIO SAND COMPANY. CONNEAUT, OHIO.

Molding sand.

Represented by U. E. Kanavel.

Space 37, Section 3.

Mr. Kanavel said he was disappointed with the size of the crowds attending the exhibits and the convention sessions. They are slow in gathering. I am glad we go to Buffalo the next time.

OLIVER MACHINERY COMPANY, GRAND RAPIDS, MICHIGAN.

Pattern and flask making machinery, Universal saw benches, band saws, hand joiners, surface planers, wood lathe, speed lathes, pattern makers' bench, universal tool grinders, disc sander, vertical spindle and disc sander, vertical spindle borer and wood trimmers, Oliver universal wood milling machines.

Represented by Joseph W. Oliver, A. N. Spencer, George F. Reinhard, A. S. Kurkjian, Walter Mentzer, Arthur

Blake and R. A. Smith.

Space 48, Section M.

"The exhibit has been most successful, and we think highly of the entire convention," says Mr. Spencer. "Crowds have been good and we certainly have nothing to complain of. I do not favor having a permanent exhibit city, but think that some Eastern city would be better for the next convention.'

ORENSTEIN-ARTHUR KOPPEL COMPANY, PITTSBURG, PENNSYL-VANIA

Steel dump car, platform car, turntable, portable track, all narrow gauge.

Represented by B. H. Behrens.

Space 9, Section B.

Mr. Behrens said: "There seems to be a fairly average attendance at the exhibits and the exhibits are excellent. have no choice for the next convention city, but am opposed to having any permanent exhibit city anywhere.

OSBORN MANUFACTURING COMPANY, CLEVELAND, OHIO.

Plain jolt molding machines, core jarring machines, rollover rock down molding machines, direct draw roll-over machines, rock-over molding machines, flask stripping machines, stripping plate machines, drop plate squeezing ma-

chines, mechanical pattern drawing machines.
Represented by H. R. Atwater, F. D. Jacobs, E. T. Doddridge, J. H. Galloway and W. J. Halliday.

Space 91, Section A, Mechanical Hall.

Mr. Jacobs expressed himself as pleased with the outcome of the convention and exhibit and said it was a great success. He was strongly in favor of Buffalo for the next convention.

THOMAS W. PANGBORN COMPANY, NEW YORK CITY, NEW YORK. Sand blasting machinery.

Represented by J. C. Pangborn and Harry D. Gates. Spaces 74 and 75, Section R.

Mr. Gates said: "I think the exposition is very fine, but not up to the high standard of many others held. I liked the crowds that came to see the exhibits, though they were small. The fact is they were of the best kind and that made up for their smaller size."

Pawling & Harnischfeger Company, Milwaukee, Wisconsin.
Single line grab or clam shell bucket in connection with Monorail electric hoist, crane controllers, electric hoists and 1-beam trollevs

Represented by George L. Mead and F. P. Breck. Space 104, Section C, Mechanical Hall.

J. W. PAXSON COMPANY, PHILADELPHIA, PENNSYLVANIA Represented by Howard M. Bougher, W. Scott Thomas, Howard Evans and Ira V. Kremer.

Mr. Evans said: "This has been the best exhibit I ever saw and there never has been one equal to the machinery exhibit in Pittsburg. I am glad that Buffalo got the next exhibit and convention.

T. J. PETERSON COMPANY, CHICAGO, ILLINOIS.

Core oils and compounds. Represented by George A. Burman, J. Purvis, Robert Brandt, George W. Doty and H. S. Peterson.

Space 68, Section N.

Space 81, Section F.

"The exhibition has not been so successful for us this year as it was last," said Mr. H. S. Peterson. "Of course, the exhibit made by the machinery manufacturers was a splendid one, and the only objection appears to be a lack of attendance. I do not favor the idea of a permanent convention or exhibit city.'

PICKANDS, BROWN & COMPANY, CHICAGO, ILLINOIS.

Display of Solvay coke. Represented by B. T. Bacon, E. A. Bateman, G. A. T. Long and J. A. Galligan.

Space 4, Section A.

PITTSBURGH STEEL FOUNDRY, PITTSBURG, PENNSYLVANIA.

Cast steel open hearth ladle, cast steel charging box, swinging grinder.

Represented by E. R. Williams.

Space 100, Section B, Mechanical Hall.

PITTSBURGH VALVE FOUNDRY AND CONSTRUCTION COMPANY, PITTSBURG, PENNSYLVANIA. Space 25, Section L.

HENRY E. PRIDMORE, CHICAGO, ILLINOIS.

Stripping plate machines, rock-over drop machines, electrical motor driven jarring machines.

Represented by R. E. Turnbull, D. F. Eagan, A. V. Magnuson and Henry A. Pridmore.

Space 96, Section B, Mechanical Hall.

ROBINSON AUTOMATIC MACHINE COMPANY, DETROIT, MICHIGAN, Automatic machines for all kinds of metal polishing. Represented by C. F. Coda.

Space 114, Section I, Mechanical Hall.

ROCKWELL FURNACE COMPANY, NEW YORK CITY, NEW YORK. Centric pouring crucible furnace.

F. S. Garrett, W. S. Quigley, A. W. Represented by Moyer and S. L. Barnes.

Space 101, Section B, Mechanical Hall.

W. S. Quigley said: "We think the convention was the best ever, up to Friday. We prefer either Buffalo or Milwaukee. would not advise having a permanent exhibition place, and believe in changing each year, as by doing this we get a large number of local foundrymen who would not attend the convention should it be located permanently."

ROGERS, BROWN & COMPANY, CINCINNATI, NEW YORK, CHICAGO, PITTSBURG, CLEVELAND, BOSTON, St. LOUIS, BIRMINGHAM AND PHILADELPHIA

Pig iron, ferro manganese, "Rosiclare" fluor spar Represented by Thos. A. Wilson, J. Raymond Morehead, Harry S. Philson, Wm. P. Cheney, H. B. B. Yergason and James R. Darragh.

Space 79, Section F. "I think that the exhibit was one of the best ever held and the increasing crowds attending indicates a growing interest," said Mr. James R. Darragh. "I am in favor of keeping the exhibits open nights in the future, so that workmen can attend from the foundry interests of the vicinity. Personally I strongly favor having a permanent convention and exhibit city."

ROSS-TACONY CRUCIBLE COMPANY, TACONY, PHILADELPHIA, PENN-

SAND MIXING MACHINE COMPANY, NEW YORK CITY, NEW YORK. Auto sand mixer.

Represented by Wm. A. Heartt, Hutton H. Haley, John Bradley, B. F. Doup and V. E. Minich.

Space 1 and 2, Section A.

"The exhibit has been a great success," Mr. Haley said, "and it has also been a profitable one for exhibitors. My choice for the next convention would have been the West; I do not like the idea of having a permanent exhibition city."

WILLIAM SELLERS & COMPANY, INC., PHILADELPHIA, PENNSYL-

Centrifugal sand mixing machine, belt driven and motor driven. Drill grinding machine, motor driven, Universal tool grinding and shaping machine.

Represented by Edward L. Holljes.

· Space 105, Section C, Mechanical Hall.

SHEPARD ELECTRIC CRANE AND HOIST COMPANY, MONTOUR FALLS, NEW YORK.

Trolley for three motor electric traveling crane with cage, including the controllers, cage controlled electric traveling hoist and back geared electric motor.

Represented by Wm. C. Briggs, Henry M. Hallett, G. H. Wood, Chas. W. Ingalls, Norman P. Farrar and Wm. A. Battey.

Space 3, Section A.

"The crowds attending this exhibit are fine, and I think that the exhibit in Pittsburg has had every other show of the kind beat a mile," declared Mr. W. A. Battey, with much enthusiasm. "We have been very successful here and I think it a good thing to consider the plan of having a permanent exhibit city in the future, at a place to be decided by the board."

THE W. W. SLY MANUFACTURING COMPANY, CLEVELAND, OHIO. Miniature display of cleaning mills, cinder mill and dust

arrester and sand blast equipment and machines.
Represented by W. W. Sly, W. C. Sly, H. J. Norris, G. J. Fanner and H. R. Morse.

J. D. SMITH FOUNDRY SUPPLY COMPANY, CLEVELAND, OHIO. Represented by F. A. Coleman.

Space 66, Section N

Space 82. Section S.

STANDARD LINSEED COMPANY, CLEVELAND, OHIO.

Samples of core oils in large tubular vases.

Represented by N. Weisenberg, A. C. Bernsteen and H. G. Tremmel.

Space 68, Section N.

Mr. Bernsteen says: "This is the best exhibition I ever attended and further I am opposed to having a permanent exhibition city. I am very much pleased with the selection of Buffalo for the next convention and exhibit."

STANDARD SAND AND MACHINE COMPANY, CLEVELAND, OHIO.

Machinery for treating sands for all kinds of foundry practice. No. 0 and medium size No. 1 or No. 2 mixing, rolling, crushing and blending plant. No. 1 Standard batch mixer, steam oil pressure attachment. "0" batch mixer, adjustable screen, pulverizing disintegrating

Represented by H. E. Boughton, J. A. Boughton and E. J. Smith.

Space 95, Section J, Mechanical Hall.

STERLING WHEELBARROW COMPANY, WEST ALLIS, WISCONSIN. Rolled steel foundry flasks.

Represented by I. R. Smith and John L. Kirk.

Space 24, Section L.

Frederic B. Stevens, Detroit, Michigan. Represented by Frederic B. Stevens.

Space 29, Section L.

SUPERIOR SAND COMPANY, CLEVELAND, OHIO.

Molding sands for heavy, medium and light grey iron, and malleable castings, brass and aluminum.

Represented by W. H. Smith and H. C. Koontz.

Space 77, Section R.

TABOR MANUFACTURING COMPANY, PHILADELPHIA, PENNSYLVANIA. Standard power squeezing machines, roll-over machines, hand and power, shockless jarring machines, combined jarring and roll-over machines, combined jarring squeezing roll-over machines and Taylor Universal tool grinder. Represented by John T. Ramsden, in charge, S. Newbold, C. W. Coleman, J. H. Coleman and C. H. Ellis.

Space 111, Section E, Mechanical Hall. An opinion of Wilfred Lewis will be found above.

TATE, JONES & COMPANY, INC., PITTSBURG, PENNSYLVANIA.

Brass crucible furnace, oil pumping, heating and regulating system, oil burners, portable burner for ladle drying and cupola lighting.

Represented by R. G. Kirkwood, J. M. Tate, Jr., C. F. France and J. C. Whitfield.

* Space 15, Section K.

TAYLOR INSTRUMENT COMPANIES, ROCHESTER, NEW YORK. Recording pyrometer, radiation pyrometer and other small instruments

Represented by Ralph C. Schwanz.

Space 83, Section S.

UNITED STATES GRAPHITE COMPANY, SAGINAW, MICHIGAN. Represented by H. C. Woodruff, Frank B. Goddard, Roy A. Corrigan and James G. Drought.

Space 78, Section R.

WADSWORTH CORE MACHINE AND EQUIPMENT Co., AKRON, OHIO. Wadsworth improved core making machines, core ovens, sand mixing and compound mills.

Represented by George H. Wadsworth.

Section S.

"The weather has been so warm that it has affected the attendance at the exhibit this season," said Mr. Wadsworth. has been a fine display, nevertheless, and undoubtedly the best ever given. I am personally in favor of a permanent exhibit

WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, PITTS-BURG. PENNSYLVANIA.

Motors and controllers for direct and alternating current and variable speed work.

Represented by B. Wiley, F. H. Herzsch, J. H. Klinck, E. M. Wise, W. B. Wilkinson and E. B. Townsend.

Space 88, Section S.

WHITING FOUNDRY EQUIPMENT COMPANY, HARVEY, ILLINOIS Standard heavy duty exhaust tumbler with steel plate barrel and lever type door fastener. Spur geared crane

ladle with standard gear cover, worm geared crane ladle,

truck for crane ladle, standard turntable.

Represented by G. R. Brandon, C. A. Hardy, A. H. Mc-Dougall, R. H. Bourne, T. S. Hammond, J. Hyslop, R. E. Prussing, N. S. Lawrence, G. E. Jones, W. B. Lewis and W. Mayor.

Space 26, Section L.

WHITNEY KEMMERER COMPANY, PITTSBURG, PENNSYLVANIA. "Whitkem" foundry coke. Represented by C. S. Bygate.

Space 10, Section G.

G. H. WILLIAMS COMPANY, CLEVELAND, OHIO. Hoisting, conveying and excavating machines. Represented by E. P. Lord.

J. B. WISE, WATERTOWN, NEW YORK.

M. R. V. brass melting furnaces, tilting type, permanent crucible using coke as fuel.

Represented by R. F. Goyne and R J. Ryan.

Space 107, Section C, Mechanical Hall.

YALE & TOWNE MANUFACTURING COMPANY, NEW YORK CITY. NEW YORK.

Hand and electric hoists with trolley running on 1-beam. Represented by H. R. Butler, A. W. Patterson, Jr., and T. J. White.

Space 51, Section Q.

CONVENTION PERSONALS.

This year the "Quiet Allan" stalked about the booths looking for bearing metals. He upheld family traditions by being driven into the suburbs for a room, much to his delight.

Genial Howard Evans wore his Philadelphia smile, pink pajamas and diamond golfer. The combination was irresistable. The-ever-ready-for-orders-Taggart talked house building be-

tween the acts

Councillor Webster, retired, but active, brought a Ferry with him to carry him about Pittsburg's burning streets. Next year he hoped to have himself and Ferry at the Niagara river. On the side the councillor thought the music hall entertainment a darn good show and hoped Buffalo would do as well.

Metallurgist Clamer, smiling and confiding, did not seem to be disturbed about the patent controversy over bearing metals.

Manganese Bronze Jones slipped in an opinion at the eleventh hour. His colleague, Copper Casting Reardin, did not say a

Everything came Sweeney's way except the new. Sweeney, who did not follow precedent, but instead mixed dates.

Mind prints (revised edition) were again on the mind of the Fiery Furnace and despite the fact that this year he had with him A. Barn(es) door. Here are a few of his thoughts.

"You can lead me to a bar but you can't make me drink-Appollinaris.'

"Being a good fellow is hard on the stomach."

"Any one can cut prices, but it takes brains to make a better article.

"Some men are self made and seem proud of the job."

"If you must have wrinkles, get them from laughing." QUIGLEY QUINTILIAN.

Merry England Goyne was always in a merry mood. He had information on furnaces and firewater.

Stevens, the scholar, was ready to pay money for catch phrases. Lunar Lumen Patch arrived after the ball. Reidenbach, the Sunday school teacher, convinced everyone

that he had missed his calling. Inspector Raynor calmly inspected everyone and everything.

Graphiter Johnson looked as keen as ever. Treasurer McCormick did not look any the worse from his

increased salary. Baltimore Smile Harvey asked everyone to have a smile.

Engineer Coleman gave Hawley-Down the orders this year instead of the colonel, the captain and the lieutenant. No one complained that they could not hear A. B. F. A.

secretary reports. Hoyt, the active, looked for fresh air at five o'clock in the

morning. Moldenke, the water doctor, saw that his patients had enough

to drink. He talked gold bricks on the side.

The Convention Queen this year rounded out a dozen years of attendance and celebrated the event by bringing a queenly

Sub-committee B2 of sand cast metals and alloys of the American Society for Testing Materials, held a meeting in Pittsburg, May 22, at which were present T. D. Lynch, chairman; Jesse L. Jones, G. H. Clamer, J. F. Thompson, G. L. Norris and W. M. Corse. Progress was made at the meeting for a standard specification in casting manganese bronze ingots, the Space 59, Section E. specification for ingots being practically decided upon.

EFFECT OF REPEATED MELTING ON MANGANESE BRONZE*

By Jesse L. Jones.†

The smooth, clean surface and beautiful golden color and also the mechanical strength of manganese bronze castings depends largely on the way the melting of the ingot metal is done. The following analysis may be regarded as typical of the composition of this alloy;

)	Aluminum	.14	
	Copper	56.61	
	Iron	1.50	
	Lead		
	Manganese	.07	
	Tin		
	Zinc	40.53	

In order that the above proportions may be as little changed as possible, the melting operation should be done quickly. If an oil fired furnace is used, the time

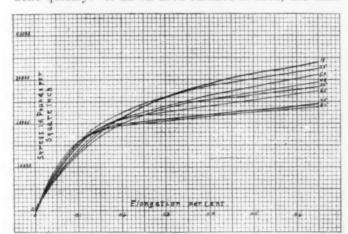


FIG. 1—TENSILE TESTS ON MANGANESE BRONZE TO DETER MINE EFFECTS OF REMELTING, IN SCHWARTZ FURNACE.

for melting a 500 pound heat should not exceed 15 or 20 minutes, and the surface of the metal should be well protected. When melting in crucibles a longer period is required, but it should be as short as possible and the metal kept well covered with charcoal. If the melting operation is unduly prolonged, considerable zinc is unavoidably volatilized, and for this reason makers of the ingot metal often advise brass founders to add 2 pounds of zinc to the hundred each time the manganese bronze is remelted.

The iron content of the alloy is supposed to be protected from oxidation by the aluminum and manganese present, but as the amounts of these metals are small, the extent of the protection they afford is rather limited. When the iron becomes oxidized, castings made from the metal have a rough, black surface, and the tensile strength and ductility are much lowered. Even if the oxidation has not gone so far as to produce castings with a blackened surface, it may show in a coarsegrained metal, full of lemon-colored spots and weak and brittle. While it is possible to replace the zinc and aluminum lost by oxidation and volatilization, it is more difficult to replace the iron and manganese because of their high melting points. The removal of the entangled or dissolved oxides of iron, copper, etc., has also to be effected if the former ductility of the manganese bronze is to be restored to its original condition; hence, it is better policy to prevent the dete-

*Paper read at Pittsburg Convention, American Brass Founders' Association, May 23-27, 1911.
†Metallurgist Westinghouse Electric and Manufacturing Company, Pittsburg, Pa.

rioration than to try to doctor the metal up once it is spoiled.

To make a practical trial of the effect of the repeated melting of manganese bronze, the following series of tests were made: Heats were run in both the crucible and the Schwartz furnace. Ingot metal was used for the tests because of its uniform character and the fact that if gates and miscellaneous scrap had been used, conditions would have varied in the different heats.

The metal charged was carefully weighed, but no special care was observed in the melting, it being done in the usual routine way. The metal was made quite hot as if wanted for pouring small castings and then poured into ingots and test bars. The ingots (less the weight of the test bars and the melting loss) were then charged again, etc., etc.

It may be said that no deduction was made for shot metal in the skimmings, any metal that splashed on the floor during the pouring or what adhered as skulls to the walls of the crucible or Schwartz furnace. All these losses were included in the melting loss, only the clean ingot metal and test bars being considered. That no unusual care was taken to keep the melting loss low may be seen by reference to the loss on crucible heat No. 1 C. No additions were made to any heat except heat No. 7 C. The following results were obtained:

Heat				
No.	In.	Out.	Loss.	Loss%
1 C	2435/8 lbs.	216 lbs.	275% lbs.	11.34
2 C	203 "	192 "	11 "	5.41
3 C	179 "	1711/2 "	71/2 "	4.19
4 C	159 "	153 "	6 "	3.77
5 C	146 "	141 "	5 "	3.48
6 C	1341/2 "	130 "	41/2 "	3.34
7 C	124 "	Additions	made to this	heat.

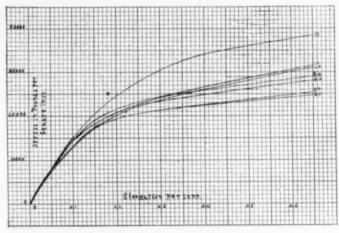


FIG. 2—TENSILE TESTS ON MANGANESE BRONZE TO DETER MINE EFFECTS OF REMELTING IN CRUCIBLE FURNACE.

The physical tests on these samples resulted as follows:

lows.	Strength and			
Heat	Elongation	Reduc-	Conduc-	Hardness
No.	in 2".	tion.	tivity.	(Shore).
IC	76850-22.5	21.5	24.10	23.3
2 C	69700-43.0	51.0	21.75	19.4
3 C	66750-45.0	55.0	20.82	19.0
4 C	60950-44.0	54.0	20.82	18.6
5 C	62450-36.0	32.5	20.07	17.8
6 C	62200-36.0	29.5	20.07	18.4
7 C	69950-37.5	37.5	21.57	18.4

The elastic limits are shown by the curves given in Fig. No. 1.

		SCHW	ARTZ FUR	NACE	HEATS.		
Heat No.	In	1.	Ou	ıt.	Lo	58.	Loss%
1 S	9853/4	lbs.	949	lbs.	363/4	lbs.	3.72
2 S	926	6.6	856	66	70	66	7.56
3 S	845	6.6	819	64	26	44	3.07
4 S	796	4.6	768	46	28	66	3.51
5 S	7421/2	60	715	6.6	271/2	6.6	3.70
6 S	7001/2	44	680	46	201/2	44	2.92
7 S	660	66	6301/2	46	291/2	66	4.47
8 S	616	6.6	5901/2	66	251/2	66	4.14
The p	hysical	tests	resulte	d as	follows		

	leat No.	Ultimate Strength.	Elonga- gation in 2".	Reduc-	Conduc- tivity.	Hardness (Shore).
1	S	74850	31.0	29.0	24.50	20.8
2	S	71000	31.5	28.5	24.00	20.2

	leat	Ultimate Strength.	Elon- gation in 2".	Reduc-	Conduc- tivity.	Hardness (Shore).
3	S	66800	42.0	45.0	22.55	19.8
4	S	67750	38.0	55.2	22.92	19.4
5	S	68050	45.0	54.5	22.92	18.4
6	S	64650	49.0	55.0	22.00	18.8
7	S	61500	35.0	27.5	21.12	18.4
8	S	60650	34.5	27.5	21.12	18.2

The elastic limits are shown by the curve given in Fig. No. 2.

CONCLUSIONS.

1. The repeated melting of manganese bronze gradually lowers the ultimate strength, elastic limit, electrical conductivity and hardness of the metal.

2. The ductility (as shown by the elongation and reduction of area) is not affected to any great extent.

3. The addition of zinc, etc., to remelted manganese bronze is not advisable.

THE CONSTRUCTION OF POLISHING WHEELS

A Discussion of the Merits of the Leather-Covered Wooden Wheels. By Theodore H. Schesch.

I notice in recent issues of THE METAL INDUSTRY,* a discussion of the merits of polishing wheels of different construction, and such is the variance of opinion as to which is best, that I beg leave to correct some statements, which my experience of forty years in this line of business leads me to believe are erroneous. I am at present superintendent of the polishing department of one of the largest manufacturing plants in this country, having 150 men under my direction, and my experience in this country, England, and Canada, has given me an opportunity to study the various methods employed in this line of work until I believe I am capable of determining which is best and how to obtain it. The three important factors which go to make success in the polish-

ing of metals are, quality, quantity and safety. Give to the workman the proper appliances with the element of danger entirely eliminated, and with intelligent instruction, the maximum in quality and production will be obtained.

Regarding the wheel, I will say that the most satisfactory one which I have used for work where a fine finish is desired and where sharp corners must be maintained, is made with a wooden center covered with leather.

BUILDING THE WHEEL,

Thoroughly kiln dried pine, bass or white wood should be used, of ¼ in. thickness and a sufficient number of pieces glued together to bring the wheel to proper thickness, the direction of the grain in the wood being placed alternately to prevent warping, and the whole placed under pressure after gluing and allowed to remain until dry. The hole for a cast-iron bushing can then be bored, using No. 22 wood screws in flange to hold the bushing in place. Some makers use in addition a washer on opposite side, with bolts, instead of screws. This is unnecessary and only adds to the weight of the wheel. The wheel is then put upon an arbor and the face turned true. Then it is ready for the cover, which should be the best of oak, tanned leather, and cut



THEODORE H. SCHESCH.

from the back of the hide. The hide should be soaked in water a few minutes, and the hair side scraped until the thin skin is entirely removed, as if any is allowed to remain it is very apt to cause the leather to become loosened when the wheel is used. This, by the way, is one of the principal causes of trouble with the leather coverings of polishing wheels; leaving the wheel too long on the washer will sometimes cause the edges to loosen. This can be readily repaired, but not so easily when a looseness occurs in the center of the covering, which never occurs when the leather is properly applied. The gluing of the leather to the wheel should be done before the leather is entirely dry, for the reason that if put on dry will cause blisters and in the following

manner:

Nail the tail end to wheel with shoemaker's tacks, as

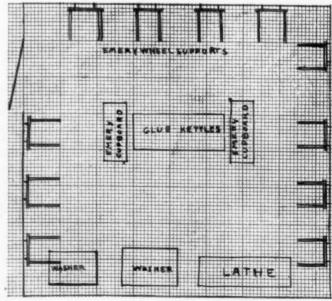


FIG. 1. DIAGRAM SHOWING OUTLAY OF GLUE ROOM.

^{*}February, page 82; March, page 131; and April, page 170.

these are easily removed. Have at hand a stretcher made of a hard wood board, in which have a slot 2 ins. x 6 ins. with length sufficient to provide a proper handle. Place the wheel securely in a vise, passing the leather through slot in stretcher and fasten with a wooden wedge, taking about one-third of the circumference at a time. Apply the glue to the wood first and carefully work out all air, meanwhile, stretching the leather and tack again. Repeat this process until wheel is nearly covered. Then nail the leather again at a point about

by cutting the leather to right length. The wheel should now be allowed to stand for two or three days, when the nails can be removed and the holes filled with leather plugs, which can be made with a belt punch. Under no circumstances should wooden pegs be used, as good work can only be obtained by an all-leather surface.

PUTTING ON THE EMERY.

Paint or shellac the sides and after truing the face, it is ready for the coat of emery. In large factories it

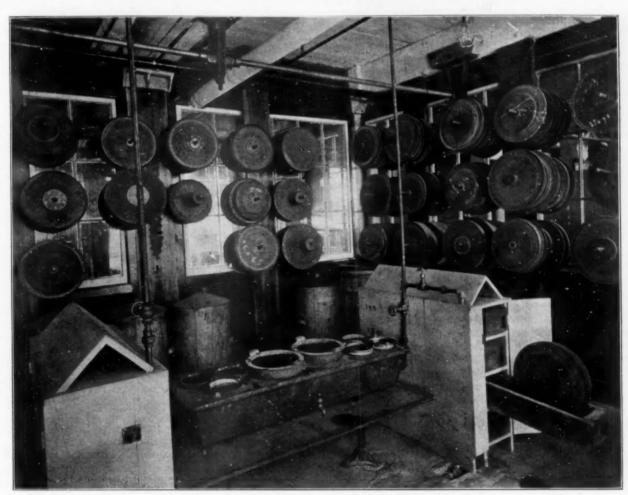


FIG. 2. VIEW OF A PROPERLY DESIGNED GLUE ROOM.

2 ins, back of the first row of nails. Draw a line square across and cut out the first 2 ins, put on. Then finish

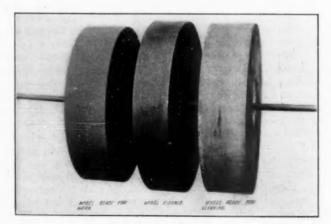


FIG. 3. CLEANED WHEEL READY TO "LAY UP."

is economical and an advantage to have a room where all wheels are prepared with emery. This room, shown in Fig. 1 in plan, and in Fig. 2 in prospective, should be centrally located, and the arrangement of the glue kettles, receptacles for emery of the different grades, washers, etc., should be convenient for the work to be done. Underneath the boxes containing emery, should be placed a small steamcoil, as better results will be obtained by having the emery warm when applied. Great care must be taken that the leather is perfectly clean when gluing, and oil or grease of any kind should never be used on the surface of leather, as in a very short time more oil will enter the leather than is required to maintain its softness, and too much oil will reduce the adhesiveness of the glue. Wheels work best when allowed to stand over night, a matter of 12 hours; a longer time will lessen the efficiency, as has been proved by actual experience. While this is a general rule, atmospheric conditions when favorable, will allow wheels to be used two hours after laying up and get the best results. It is economy to use only the best of materials, in glue, emery, leather and wheels. using a carborundum brick. The latter method when carefully done will prove satisfactory. This applies only

TESTING AND RELAYING.

Before delivering the wheel to the operator, it is balanced. The best method is to drill four ½ in. holes, quartering, through the side of the wheel into which, as required, can be driven plugs of lead until the desired result is obtained. On the return of the wheel to be relaid, it is first necessary to remove the particles of emery which still adhere. This can be done with a black diamond in a lathe or the operator may remove them by

using a carborundum brick. The latter method when carefully done will prove satisfactory. This applies only to a grease or finishing wheel. With roughing wheels, the cleaning is most commonly done in a washer, with which every polisher is familiar, care being taken not to allow the leather to become too wet, as this will loosen the edges from the wood. Be sure that the wheel is clean. The wheel is now ready to lay up, as shown in Fig. 3.

I have briefly described a wheel suitable for a certain class of work as described above, and it is only for this purpose that a wheel of this kind should be used.

SEA GREEN GOLD SOLUTION

AN ARTICLE GIVING DETAILED INSTRUCTIONS FOR PRODUCING THE POPULAR GREEN GOLD FINISH.

By William Schneider.

The sea green gold solution, which I am about to advocate, has been more or less discussed from a theoretical and practical standpoint of view. This subject has been constantly before the plating profession and when platers meet for discussion we find in the course of the conversation that there are no two who use the same standard solution. The solution which I am giving to the profession is one which I have used for several years with satisfaction. The first consideration of the advantage of this solution is the quality of the work turned The demand upon the plater by the manufacturer is to get quick results of uniformity in color. The difficulties, which one encounters in green gold plating, are of such nature as to require constant attention and are at times very annoying for the practical plater. simplicity of the following solution obviates all this trouble. I positively disagree with the use of arsenic in green gold solutions, my objections to its use are that it has no permanent qualities. Every plater is aware of its fading qualities when used in connection with any deposit; therefore in connection with green gold it should never be used if satisfactory and permanent results are

To prepare a ten gallon solution use a twelve gallon receptacle. Fill half full with water, dissolve 20 ounces of C. P. potassium cyanide in the same and then add 12 pennyweights of pure metallic gold, reduced to a fulminate. To accomplish this dissolve the metallic gold in aqua regia (2 parts hydrochloric acid and 3 parts nitric acid mixed), using 5 parts of the mixed acid by weight to reduce 1 part of metallic gold. Dissolve the gold in a regular beaker glass, using a hot water or hot sand bath for the purpose. When the gold is all dissolved and the solution becomes syrupy remove, add cold water and then precipitate carefully with ammonia; a brown spongy precipitate will result; wash several times to remove the odor of ammonia. To the cyanide and gold add 3 pennyweights of pure silver, previously converted to nitrate, with equal parts of nitric acid and water; then precipitate as a chloride, using common salt or muriatic acid for the purpose. Wash thoroughly before adding to the solution of cyanide and gold. The solution should be boiled for half an hour or more after preparation. It will not be necessary to boil 5 gallons of the solution if it is prepared in a more concentrated form, say 1 gallon; then add the balance of the 9 gallons of water. This method will give the same results. After boiling bring solution up to 10 degs. by adding potassium

Now prepare a saturated solution of acetate of lead and C. P. caustic soda in a quart bottle, being careful to add all the acetate of lead the caustic soda will absorb.

cyanide for quicker action.

Let the solution stand for some time, until it becomes clear, then add to the solution of silver, gold and cyanide, 4 small teaspoons, mix thoroughly and then add sufficient hot or cold water to make up the 10 gallons prescribed. Use a low current density; the solution should stand nearly 10 degs. Use a temperature of 160 degs. Fahr., and agitate the work by moving to and fro while plating. By adding more or less of the lead solution the deposit can be made lighter or darker at the discretion of the operator.

I have thoroughly tried out the above solution and can positively state that I have maintained a uniform color on large quantities of bag frames and buckles throughout the day, samples of which have been submitted to various platers. To prepare the work for this solution, if hard soldered, I would advise that the work be satin dipped, put through the usual smut solution, of which there are a number on the market, rinse in water, then in potassium cyanide solution, then in cold water and finally put in the green gold solution. If soft soldered, the articles must be copper plated, then strike in brass and then in the green gold solution. This solution is given for what it is worth and can be thoroughly worked out by most any practical plater.

If it becomes necessary to replenish the solution during the day, it would be advisable to have a mixture of gold and silver prepared on hand and when necessary add the same with a teaspoonful of the saturated lead solution, mix thoroughly and let stand for half an hour before resuming work.

NEW ALUMINUM ALLOY.

(FROM UNITED STATES CONSUL ALBERT HALSTEAD, BIRMINGHAM, ENGLAND.)

A paper on aluminum alloys was recently read before the Birmingham branch of the British Foundrymen's Association. The following is an abstract of the paper as published in the *Engineer*:

"The result of adding aluminum to copper was to cause an immediate increase both in the strength and in the ductility of the copper. The ductility attained a maximum at 7.35 per cent. aluminum. Beyond that it fell, and when 11 per cent. was reached the alloy became too brittle to be of any commercial value. Heat treatment had little effect upon alloys containing less than 7.35 per cent. aluminum. Beyond that they were stiffened by heat treatment at 800 degs. Cent. Alloys containing less than 7.5 per cent. aluminum were not amenable to cold working, though they were improved by hot rolling, while higher allows were much improved by either hot or cold working. Such alloys showed no tendency to 'age' even after standing a couple of years."

THE POURING AND MELTING POINTS OF SOME HIGH GRADE BRONZES.

By C. P. KARR.*

The melting points of most of the common metals and binary alloys have been carefully studied by a number of physicists and their results have been published in the various technical periodicals. Almost all of these experiments, however, have been made in laboratories where every facility has been furnished and every condition fulfilled to make the determinations adequate and conclusive. The pouring temperatures, if they have been taken in foundries in accordance with foundry conditions and every day practice have not been published so far as I can ascertain. The Bureau of Standards, Washington, D. C., have referred me to Shepherd's thermo-electric observations on brass, Jour. Phys. Chem., Vol 8, p. 423, 1904, which are in close accord with my own, and excepting some data on casting temperatures by Percy Longmuir, referred to in Table II, and Stillman's Engineering Chemistry, early editions, but omitted from the last edition (1910), I have been unable to find any reliable data on this important question.

The experiments here described were conducted in January, this year, in the foundry of the Nathan Manufacturing Company, New York City, on the pouring temperatures of various bronzes made at their works under foundry conditions and in the course of the day's work, and without any hindrance to the regular functions of the foundry. The melting temperatures could not be taken in the foundry itself without interfering with said functions and therefore these determinations were made in the company's laboratories on four of the same type of metals from which the pouring tests, as recorded in Table I, were made.

The Féry radiation pyrometer was chosen as the instrument with which to undertake these tests rather than a thermo-junction couple plunged into the body of molten metal, because the former is better adapted to everyday foundation conditions and current practice. The temperatures stated in Table I are relative and not absolute. Owing to the rapid formation of oxides on the surface of the molten metal a large number of readings were taken as the metal was poured into the flasks with the expectation of securing a sufficient number of maximum coincident readings that should more clearly indicate the pouring temperatures than an average of all the readings taken. No claim is made for exact accuracy of the temperatures recorded because they were made hurriedly under the ordinary regular foundry conditions familiar to every expert foundryman and because of these variable oxide films and surfaces. But it is believed that the drops in the temperatures from the times of pouring from the furnace into the bull-ladles or the foundry floor respectively, to the times of pouring into the last flask of a series poured, are relatively accurate. The times stated in the table were in every instance taken with a stop watch that indicated seconds on its large dial and automatically recorded minutes on its small dial.

In taking the melting temperatures in the laboratory "black body" conditions were applied as closely as possible, the metal was melted in a gas furnace supplied with compressed air. Temperatures were taken immediately after the blast was turned off, the metal stirred slowly but continuously until it cooled down to a pasty state and the pyrometer needle remained stationary for at least seven consecutive readings, this lowest consecutive coincident reading was taken as the melting point of the alloy. As

the amount of copper contained in an alloy has so much bearing upon the temperature of fusion the type of the alloy is indicated in the table by its approximate percentage composition of copper.

The yellow brass used in the laboratory test was made from commercial sheet brass clippings. An analysis was made of the brass ingot after the melting test in order to determine whether it contained any constituent that would naturally lower the melting point of pure brass. was found to contain about 68.8 per cent. of copper, 0.19 per cent. of lead and the balance zinc with a trace of iron. For this composition the pyrometer indicated a melting point of 1640 degs. Fahr., but on account of the heavy oxidation of the surface it is believed that this reading may be somewhat too low and particularly as the melting point of a brass containing 70 per cent. of copper and 30 per cent. zinc was established at about 950 degs. Cent., or 1742 degs. Fahr., by the examination of Haycock and Neville, the pioneer explorers in this field, although their composition contained no lead. The melting point of copper is taken to be about 1,084 degs. Cent., or 1,983 degs. Fahr. An independent reading of the No. 4 metal, not mentioned in the table, was taken in the laboratory and it showed a melting point of 1,850 degs. Fahr., a variation of 30 degs. from the figure given in the table, a variation due probably either to a state of recalescence or to some variability in its composition.

It was desired to make a comparison between the drop in temperature of metal made in a coal-fired pit furnace and the metal made in a coke-fired M. R. V. furnace. To do this all the conditions must be as nearly alike as possible. As the metal in the pit fires had to be brought from the furnace to the foundry floor in the pot in which the metal was compounded, the pyrometric readings had to be taken on the foundry floor directly from the pot itself after it was skimmed. To institute the same kind of reading with the metal from the M. R. V. furnace poured into the bull-ladle the latter had to be skimmed and read at the floor level. As the composition of the metals compared differed from one another the average copper constituent had to be about the same, and this condition was fulfilled. There were three heats in the cokefired furnaces with six readings at the foundry floor level with an average of 1,832 degs. Fahr., and thirty-two readings at the pouring bench with an average of 1,780 degs. Fahr., or an average drop of 52 degs. There were six heats of the metal in the coal-fired furnaces with fifteen readings at the furnace floor with an average of 1,981 degs Fahr., and fifty-one readings at the pouring bench with an average of 1,838 degs. Fahr., or an average drop of 143 degs. Fahr.

Although the mass of metal poured from the two types of furnaces was about the same in volume and notwith-standing the efforts made to equalize the mechanical conditions it is my belief that nothing conclusive can be drawn from the comparison for these reasons:

The graphite pots of the coal-fired furnaces and the fire-clay lined bull-ladles containing the metal from the coke-fired furnaces do not have the same emissive power and their coefficients of emissivity were unknown, and secondly the metal in the coal-fired furnaces was a hydraulic metal and it was difficult to keep its surface clear in taking the maximum readings. All the readings were taken with the Tycos type of a Féry radiation pyrometer, No. 8350. Tested by the Bureau of Standards at Washington, D. C., September 14, 1910. Resistance 62.4 ohms at 22.5 degs. Cent. Calibrated for "Black Body." Telescope

^{*}Paper read at Pittsburg Convention of American Brass Founders' Association, May 22-27, 1911.

6223 and used with a horizontal scale, graduated from 800 to 2,400 degs. Fahr. Mr. E. C. Taylor, of the Taylor Instrument Company, Rochester, N. Y., assisted me by taking the focus on all the metals examined.

It was hoped for but hardly to be expected that a comparison of the rates of cooling as shown in the Table I would lead to the development of a theory that could be used in a practical way to express the drop in temperature of any given bronze alloy for a stated period of time, so that knowing the initial temperature the correct pouring temperature could be deduced, but so many conditions of foundry practice were involved and so few have been the experiments made that such a law, if one there be, could not as yet be enunciated. Of course the basic metal of all bronzes is copper, and the inter-action of other metals upon copper itself and upon one another simultaneously, especially in combination with the complex formation of solid solutions and eutectic mixtures which have not been fully studied, this inter-action, so to speak, is so inseparably a part of the problem that nothing conclusive could be formulated.

To ascertain if a heat has been a good one it becomes necessary to make some well-known tests. No matter how great the skill of the foundryman may be, he cannot advice have been of such invaluable assistance to me in the conducting of these experiments and the preparation of this report, I quote:

"Your remarks regarding the uncertainty in comparing Féry readings taken under diverse conditions as to the material of the surroundings, appear to us to be very much to the point, and such uncertainties, due to varying emissivities of containers, may be very considerable. If, however, the whole crucible is hot, and the surface of the metal is well below the rim, say, half way into the depth of a crucible of twice the height of its diameter, and the metal is not skimmed, it would make a minimum difference in readings for the difference in crucibles. Perhaps by heating two half-filled crucibles of different material and same size side by side in a furnace until they attain the same temperature, and then withdrawing them and reading metal temperatures with the Féry, as above indicated, you might be able to check this matter out."

I did not have the opportunity to follow up this valuable suggestion, for it could be carried out very well with two black lead crucibles or two bull-ladles, but in comparing bull-ladle and black lead pot radiations the emissivities of the containers must be known and also that of the metals contained. Dr. Burgess has determined the emissivities of copper and cuprous oxide and their values might be introduced to arrive

Dute of Test 1911	M.RV Plenace No Pr.	Metal	Approxi- smate copper constrt- uent	Temperi at Turns Thus on t ing Stre Trestal	ace/Tauth the poor-	at Found	nums ed. fact of	Bench / Pocus a metal	nom Pate	n of-	Pouring From Pornace Mouth	Time From Fronces Floor	Tempera-	Amount of metal Boured per heat	No of degrees of Temperature dropped for Second	Melt		Remarks.
Jan.				Degrees Fluitz	No of- Reals maps	Read regio	Begress Fisher	Readings	Paker	resolds	Myn - Sec	Men - Sec.	Dag Thár	76a	Deg. Fahr	720 of-	Beg Fair	
/6 20 /6 /8 /6	76285	2 3 3 4.5	84 81 81 89	1755 2070 1720 1770 1740	2 4 2 4	2	1675	8 14 10 7	1840 1650 1600 1670	8 14 23 10	3-0 4-4 3-0 6-6 1-55	5-6	55 230 70 170 70	450 450 450 450 450	0.942 0.942 0.436 0.556 0.68	20	1640	Coroled down by gates Toma taken from Fur- nace floor. Yellow Brass
18	5	6	ST SY	1990	2	.2	1970	8	1940	5	3-0	2-30	30 60	450	0.172	17	1820	Time taken from Foundary Hours
18	2 2	1	81 81 81	1850	2 2	2	1850	14 21 19	1800 1800 1735	14	3-0	3.55	50 50 65	450 450 450	0.2/2 0.178 0.164			
18 18 18 18 16	At.	55555	84 84 84 84 84			2 4 3 2 2 2	1900 1992- 2113 2000 1880 2000	10 10 10 3 9	1800 1750 1890 1900 1840	9		3-25 6-0 5-0 4-50 3-6 3-40	100 242 223 100 40 154	190	0.488 0.866 0.743 0.345 0.218	22	1735	could down by gate

A TABULATION OF THE RESULTS OBTAINED IN THE INVESTIGATION.

know that his heat has been a satisfactory one until these tests have been made. Although every other condition may be fulfilled, if the pouring temperature has not been right the heat will prove to have been unsatisfactory. The pyrometer is only a precautionary means to an end, but not a cure-all. If at the time the observations are undertaken to establish the correct pouring temperature, the pyrometer readings are concurrently taken both as a check and as a record and the trial continued consecutively for at least one week to obtain simultaneous readings and concordant results, then the standard pouring temperature may be arrived at and the real value of the pyrometer will be recognized by readings concurrent with the standard thus obtained. The fluctuations of the needle due to oxide films and slaggy surfaces must constantly be borne in mind and for this reason, if for no other, the maximum readings should be the only ones resorted to as a guide for the pouring temperature, and even this should be compared with and confirmed by the melting point of the alloy in question. Said melting point to be established by some suitable laboratory method. In reference to the pouring temperatures, from a private communication received February 16 from Dr. S. W. Stratton, whose unfailing courtesy and

at the radiation of the metals as copper predominates in the alloys discussed and cuprous oxides in the oxide surfaces. See B. S. Reprint No. 121.

In 1909, in an address delivered before the Metallurgical Society, of Birmingham, England, Mr. Percy Longmuir refers to the casting temperatures of some gun metal, yellow brass, red brass and Muntz metal, the best specimens registered as follows:

TABLE II.

		I ABLE 11.		
Gun metal Yellow brass. Red brass	. 1,020 . 1,073	Tensile strength tons per sq. in. 14.8 12.7 12.6	Elongation Per Cent. 14.5 43.0 26.0	Reduction of area Per Cent. 16.7 35.6 30.2
Muntz metal.	. 973	18.9	15.0	16.1
In comparis	on, tests made	e under my	direction were	as follows:
No. 1 metal	. 927	15.28	8.93	6.67
No. 2 metal	. 912	14.85	18.0	12.50
No. 3 metal	. 910	13.00	40.0	33.00
No. 4 metal	. 1,075	18.99	14.3	16.67
No. 5 metal	. 1,010 .	12.83	9.0	8.00
No. 6 metal	. 1.004	16.79	3.56	6.25

In the above table the No. 3 metal is a yellow brass; No. 4 metal corresponds to Mr. Longmuir's gun metal; No. 5 is of a lower grade than the other bronzes; No. 6 is a high grade hydraulic bronze and while showing a high tensile strength its elongation is small and it possesses proportionately a low percentage of reduction in area.

It has been suggested to me by an expert foundryman that the best way in which to make use of the pyrometer in the foundry for taking the pouring temperatures is to have pyrometer set up in the foundry in a suitably protected structure and bring the pot to the pyrometer instead of carrying the pyrometer around with the pot to the great confusion and disgust of the caster. With this recommendation I most heartily agree

"The writer begs to acknowledge his great indebtedness to Dr. Wilder D. Bancroft, of Cornell University, for the special reports of Mr. Shepherd's investigations and others concerning the cooling curves of metal and their oxides, and to Prof. Chas. Baskerville for his valued advice and assistance."

REMARKABLE COPPER, LEAD, TIN ALLOY CASTING

A recent application of a copper, lead, tin alloy as a substitute for cast iron and manganese bronze was shown in an installation of what is known as a baffler. This casting, which is used between the oil pump and the step bearing of a vertical Curtis turbine, is shown in section, Fig. 1, and in the process of being tested in Fig. 2. The baffler serves in effect as a check valve for the oil, preventing its backward escape, and the consequent sudden dropping of the step in case of failure of the oil pressure. The specifications called for a metal that would

mechanical tests made on this metal by F. L. Pryor, Professor of Experimental Engineering at Stevens Institute of Technology, Hoboken, N. J., is as follows:

Designation of Material	No. 1	No. 2
Diameter of specimen, ins. (original)	1.496	1.498
Diameter of specimen, ins. (final)	1.460	1.470
Area of specimen, sq. ins. (original)	1.7577	1.7624
Area of specimen, sq. ins. (final)	1.6742	1.6972
Reduction of area, per cent	4.7	3.7
Elongation, measured over 9.0 ins. per cent	4.4	3.8

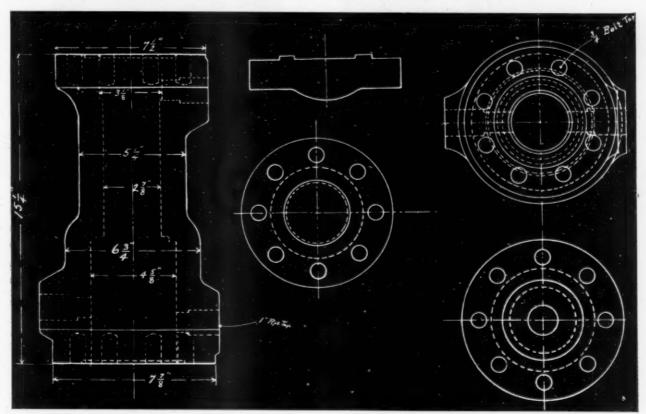


FIG. 1. SKETCH SHOWING CONSTRUCTION AND DIMENSIO NS OF A BAFFLER MADE OF ALLAN NO. 2 BRONZE.

withstand a water or steam pressure of 1,500 pounds. Manganese bronze was first tried, but it was found that castings made from this metal would not stand up and recourse was finally had to what is known as Allan No. 2 bronze. This metal consists of copper, 66; lead, 25, and tin 9, and is manufactured by Andrew Allan & Son, New York. Fourteen of these castings were made and eleven of them passed the test and five of them are now in use. The valve shown in Fig. 2 shows the gauge registering at 3,000 pounds bursting pressure, which was just double the required strength. The castings weigh 200 pounds each and were cast in green sand with an intricate system of coring. A report of

Elongation, measured over 8 ins., uer cent	4.6	3.9
Yield point, lbs. (actual)	23,500	21.750
Yield point, lbs. (per sq. in.)	13,370	12,340
Ultimate tensile strength, lbs. (actual)	30,710	30,100
Ultimate tensile strength, lbs. (per sq. in.)	17.470	17.080

A photomicrograph of the bronze taken by a well-known expert at a leading University, is shown in Fig. 3. The sample was unetched and the dark spots show the distribution of the lead. It can be seen from this picture, magnified 45 diameters, that the metal is dense and impervious to passage of air or moisture. The theory of the mixture being that the copper and tin form the resisting alloy and act as a matrix for the lead, thus

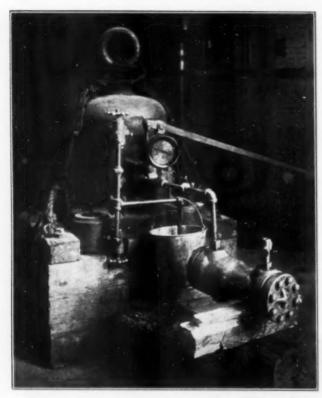


FIG. 2. THE BAFFLER BEING TESTED AT 3,000 POUNDS.

giving the dense character to the metal. In Fig. 4 is shown a fracture of the bronze magnified to show the homogeneous structure of the metal. The use of this class of metal for such a purpose is certainly novel and shows how little is really known of the possibilities of alloyed mixtures. The short life of the cast iron bafflers previously used necessitated the substitution of some other metal, therefore, in a sense the discovery of the fitness of Allan No. 2 Bronze was really a forced one.

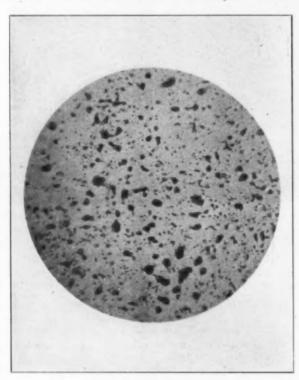


FIG. 3. ALLAN NO. 2 BRONZE MAGNIFIED 45 DIAMETERS, UNETCHED.

We have no doubt but that if some engineers had been asked for their opinion they would have deemed the proposition ridiculous. Further reports of the behavior of these baffler castings will be waited for with considerable interest by engineers in general.

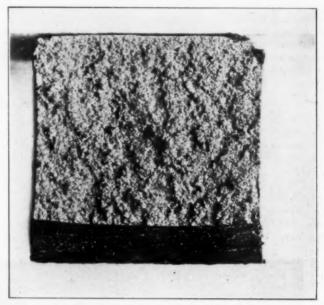


FIG. 4. FRACTURE OF ALLAN NO. 2 BRONZE, MAGNIFIED TO SHOW STRUCTURE.

PLATES FOR MUSIC ENGRAVING.

[FROM UNITED STATES CONSUL GENERAL FRANK H. MASON, PARIS, FRANCE.]

An inquiry comes from St. Louis asking for technical information as to the kind of plates used in Paris and France for engraving music. Investigation of this purely technical subject has involved personal inquiries at some of the leading music publishers, and the fol-

lowing information secured:

The plates used in France for music engraving are made in four qualities, as follows: No. 1 contains 60 per cent. copper; No. 2, 46 per cent.; No. 3, 35 per cent.; No. 4, 20 per cent.; but it was not learned with what metal or metals the copper is alloyed—probably wholly or mainly with zinc. Nos. 2 and 3 are most generally used, the latter for ordinary work, band parts, songs, etc., and the former for piano music. No. 1 is only employed for expensive work (gift books, etc.), and No. 4 for very common work. The plates are made in five sizes, viz.: Opera, 20 by 27 centimeters (centimeter = 0.3937 inch); symphonie, 21 by 28 centimeters; grand symphonie, 22½ by 30 centimeters; partition, 24½ by 32 centimeters; and conservatoire, 26½ by 34 centimeters.

The following table gives in francs (franc = 19.3 cents) an idea of the proportionate prices of these sizes and qualities (but the price of copper is somewhat higher now—end of May, 1911—than when this list was made):

nst was made .				
Sizes.	Vo. 1.	No. 2.	No. 3.	No. 4.
F	rancs.	Francs.	Francs.	Francs.
Opera	1.80	1.60	1.50	1.40
Symphonie	2.15	1.80	1.70	1.50
Grand symphonie	2.60	2.30	2.10	1.80
Partition	3.20	2.80	2.60	1.90
Conservatoire	-3.60	3.20	2.80	2.00

Britannia metal is little used in France, and would not, I think, be suitable for music plates. Zinc has been tried, but is too hard, spoils the punches and burins, and is liable to rust.



With Which are Incorporated

THE ALUMINUM WORLD
THE BRASS FOUNDER AND FINISHER
THE ELECTRO-PLATERS' REVIEW, COPPER AND BRASS

Published Monthly by THE METAL INDUSTRY PUBLISHING COMPANY (Incorporated)

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CONTENTS

	FAGE.
The Pittsburg Convention of Foundrymen and Manufacturers	237
List of Exhibitors	243
Effects of Repeated Melting on Manganese Bronze	253
The Construction of Polishing Wheels	254
Sea Green Gold Solution	256
The Pouring and Melting Points of Some High Grade Bronzes	257
Remarkable Copper, Lead, Tin Alloy Casting	259
Editorial:	
The Pittsburg Convention	261
	201
Criticism and Comment:	
Nickel Plating	
Coloring	
Sawdust for Drying	
Shop Problems	
Patents	266
Industrial:	
New Osborn Machines. Electric Drive Jarring Machine. Metals and Alloys Magnetic Separator Hauck Kerosene Burners New Polishing Stand Test of Monarch Furnaces. Deane Sand Sifter Stationary Brass Furnace. Crystolon Crown Sand Rammers Carborundum Refractories Mumford Core Bench Jolt Rammer Centrifugal Dryer "None Such" Carboy Rocker.	269 270 270 271 271 272 272 272 272 273
Associations and Societies	274
Personals	275
Correspondence	276
Trade News	280
Metal Market Review	284
Metal Prices	

THE PITTSBURG CONVENTION

Another convention, after months of the hard and painstaking labor incidental to such an undertaking, has been carried to a successful close. There now remains only the pleasant task to write into the records the report of the big meeting. To give the words of praise where such are warranted and to add a few suggestions or criticism as the case may be; to serve as a guide for future gatherings.

THE METAL INDUSTRY in the issue for May gave a detailed account of what preparations had been made for the holding of the annual exhibit of foundry machinery, given by the Foundry and Machine Exhibition Company, as well as the program of the various foundrymen's associations expected to assemble in convention at the same time. How well these expectations were fulfilled can be judged by the reader by referring to the opening pages of this issue. A full report is given of the happenings at the big convention which exceeded all the hopes of the most optimistic enthusiast.

THE REGISTRATION.

Too much praise cannot be given to the powers in charge of the registration. The compiling into accurate and definite form nearly 2,000 names in the short time allotted was very deftly and cleverly done. The manner in which tickets to the various entertainment features were issued was excellent. By the card index system employed only those who were really entitled to them and for whose benefit the entertainments were planned received the coveted tickets. The lady from Detroit certainly understood her business and it is to be hoped that the plan may be carried out in all its completeness at future conventions. One suggestion might be made, however, and that is to include the local stopping place of each registrant in the lists that are published from day to day. This information was collected at the bureau and could be easily printed on the list with the name and firm.

THE EXHIBITION.

All accounts agree that the offering in the line of foundry appliances and supplies that made up the exhibition far surpassed anything previously attempted in this line. The interviews with the firms exhibiting reported in this issue show a general feeling of satisfaction that business in general is on a good firm basis and that while no great boom need be expected for some time to come, conditions on the whole are good. Many of the firms sold all of their equipment as it stood at the exhibition and shipped it direct to the purchaser. The number of those exhibiting exceeded by

twenty-seven the total at the exhibition held in Detroit a year ago and, judging from the number of new applications for space for next year now in the hands of Secretary Hoyt, the exhibition of 1912 to be held probably in Buffalo will score a still greater success than this year.

The principal benefit to be derived from such an exhibit as this one is the opportunity afforded the manufacturers to show for the first time the newest improvements in machinery and devices incidental to the foundry industry. On the other hand it gives the visiting foundryman, be he owner or employee, a chance to learn of the progress made in his chosen field. The Pittsburg show was no exception to the rule and a large number of entirely new things were shown. From molding machines to core washes the line of novel improvements stretched until the observer became bewildered and decided the time at his disposal was too short to do justice to the display. He therefore took away with him all the literature he could carry to study over at his leisure. In order to aid those of our readers who are interested in getting at the salient points of the new machines, devices and methods we have collected a number, accounts of which will be found in the "Industrial" section of this issue of THE METAL INDUSTRY.

While the buildings in which the exhibition was held were admirably suited for the purpose and the internal arrangements were well nigh perfect, there was one important point which appeared to have been overlooked. We refer to the location in relation to accessibility from the hotels and depots of the city. In wide contrast to the Detroit exhibition where one could get in a car and ride for twenty minutes through beautiful country, cooling breezes and pure air, the visitor found himself doomed to a walk over hot, dusty sidewalks through a torrid atmosphere polluted with smoke and soot which assailed alike nostrils, throat and clothing. As near as one was able to find out, a car ran to the grounds but seldom, and if an uninitiated person got on a trolley car that seemed to be headed for the right place he soon found himself shunted on to another street with no transfer in sight and it was a case of wait or walk, the latter alternative being usually chosen. Of course to the lucky exhibitor whose pockets bulged with fat orders the situation worked no hardship; for him waited the throbbing taxi cab. It was the unfortunate visitor with just enough funds to see him through that pounded the pavements and reached his hotel with throbbing head and feet. Let us hope that the committee in charge of the next exhibition will bear this matter clearly in mind and see that there is an easy and direct means of conveyance to the grounds.

EXHIBITION ENTRANCE.

An arrangement which we believe would be of benefit to the exhibitors in the main hall is that the entrance to the machinery hall should be through the still exhibits. The visitor naturally gravitates to the motion part of the show and when he can get there without passing by the still part he may forget or not have the time to look around the still exhibits as thoroughly as he should. At the Detroit convention he was compelled to journey through the main building before reaching machinery hall, but in Pittsburg the foundrymen could reach the moving machinery without going near the still exhibits. In justice to all of the exhibitors we believe that the entrance should first be through the main building.

FRESH AIR.

Just a word about air that is fit to breathe. Everyone knows how necessary it is to have an abundance of pure air indoors and out and when the temperature soars to 100 degs, in the shade as it did at Pittsburg there is not much air stirring. At Pittsburg this state of affairs could have been remedied by having all of the doorways and windows wide open. Unfortunately some of the doorways had to be closed on account of lack of gates and all of the windows were not thrown open until the third morning of the convention. In the meantime the attendants sweltered.

The stricter regulation of smoking would also be a means of providing air enough to go around as well as avoiding a possible danger from fire. In the Pittsburg buildings the fire marshal had positively forbidden smoking, yet his order had no effect and tobacco fire brands were carried among the inflammable flags and bunting which through good luck were not ignited. With the terrible fire disasters fresh in the public memory and almost every one traceable to careless smokers, the management might well consider the advisability of restricting the smokers to a room by themselves where all can become smoked herrings if they so desire. But in any event we hope that at all future conventions there will be an attempt made to furnish air that is fit to breathe.

THE SESSIONS.

The sessions of the American Brass Founders' Association were held in a room especially fitted up for the purpose. This part of the scheme was all right, but the location of the room was unfortunate as the noise of the machinery outside practically drowned the speakers' voices to those sitting two rows back. The papers read were excellent and upon a wide range of subjects. Several of these papers are published in this issue and The Metal Industry invites discussion upon them from any one who has had practical experience in the field they cover.

The old story of getting papers ready far enough in advance of the meeting to allow for printing and distribution among the members is again pertinent to the case. If this could be done there could and probably would be more discussion and it is the discussion that makes a paper valuable. The authenticity and reliability of the paper increases in proportion to the author's ability to withstand criticism of his statements. As the best writers sometimes are the poorest speakers, would it not be a good plan to have a long paper read, say, in extract by either author or secretary

r some one with a good clear voice that can be heard if over the room. There would be more time for discussion and in the case of a previously distributed aper much more valuable discussion. It is studied ather than spontaneous discussion that we want.

Our English sister society, the Institute of Metals, seem to have no difficulty in getting out the papers and even send them across the water in advance of a meeting, so why can we not do the same? This is a point for the Committee on Papers to take up and urge upon prospective writers to get their papers in early. Where only one opportunity per year is afforded for scientific and practical men to get together to discuss questions bearing on their everyday work, it seems too

bad to let a carefully prepared paper go by without anything more than a few snap-shot remarks, which might not be made at all if mature study of the paper had been possible.

Taking it all in all, it was a great convention and everyone who attended it could not fail to be benefited and could go away feeling larger in experience and broader in mind due to his few days contact with fellow worker and competitor. Whatever remarks we have made that seem to savor of criticism are only intended in the way of trade journal suggestions—suggestions which if acted upon only in a measure will tend to make the coming meetings more perfect than ever and in the end leave us speechless in admiration.



NICKEL PLATING

TO THE EDITOR OF THE METAL INDUSTRY:

Let me state at the outset that my comment on Mr. Brown's* original article on nickel plating was not inspired simply by a desire to rush into print, but rather to offset certain statements that I believe did not conform to the best practice. Mr. Brown's apology for continuing this discussion is particularly appropriate, for "were all the readers of your paper chemists or had they a general knowledge of chemistry" he would have been absolutely unwarranted in sending in the communication appearing in your issue for May. The reaction described by Lupke I believe to be analogous to what takes place in nickel plating. Mr. Brown himself states in his article (February issue) that it is possible that the ammonium sulphate is decomposed "with the formation of ammonium hydrate." If the ammonium hydroxide is formed there is no good reason for supposing that it reacts differently in a solution of nickel sulphate than in one of common salt described by Lupke. Lupke expressly states that this reaction takes place wherever NH4OH is present. In the presence of nickel sulphate, nickelous hydroxide would be formed and with common salt, sodium hydroxide would result.

Theoretically, the reactions I have given appear to be the most satisfactory explanation of the phenomena observed in nickel plating; i. e., the wearing away of the anode and the deposition of nickel upon the cathode. As there is no question of the breaking up of the nickel sulphate into the ions, Ni and SO4 it is reasonable to assume that the ammonium sulphate and all conducting salts also break up into negative and positive ions, otherwise they would not fulfill their function. The works from which I have quoted are not by "old time authors"; they are all regarded as modern authorities. If Mr. Brown has a better theory of electrolysis than than found in the books on electrochemistry I am sure we should all like to hear from him. Of course I have given simply the elementary reactions. A full treatment of the subject would involve the consideration of "electrolytic dissociation," the conductivity of solutions and electro-chemical equivalents, which is unsuitable to be discussed The decomposition of salts used in plating has been scientifically determined by LeBlanc and others. proven that it requires on an average of 2 volts, which is the normal voltage employed in nickel plating, rather low for most work.

The principle from Ewell's Physical Chemistry, page 294, may certainly be applied to nearly all plating solutions. It reads:

"If the anode is a metal of which the electrolyte is a salt, the anions are not liberated, but an equivalent of metal cations goes into solution. The amount of metal dissolved at the anode will equal that deposited at the cathode." This means in the language of the plater "working from the anode." I did not state that a nickel solution was "completely regenerated from the anode." My words were: "This may be closely realized in practice." To prove my contention let me quote from an authority nearer home. "A good nickel anode with the solution at the right density should dissolve free enough, or nearly so, to supply the bath with metal as fast as it is deposited at the cathode." This is from the National Electro-Platers' Quarterly for September, 1910; and written by a man who has been intimately connected with the nickel plating industry since its foundation.

I venture to say that "working from the anode," is standard practice and followed by the most skilful platers in the business. This is especially so with silver, cyanide copper and brass solutions. To be able to do this, however, requires years of experience and the exercise of good judgment. Some platers who follow this practice do so unaware that they are working along the most approved scientific lines. Mr. Brown seems to think that under these conditions there should be "small demand for nickel salts"; which is a particularly puerile statement to make, when as a matter of fact nickel salts are used principally to replace the solution lost in working.

The quotation from Ewell does not necessarily mean that the metal is deposited in an adherent, reguline condition on the cathode. It means simply that the amount of metal set free from the solution at the cathode is replaced by an equal amount dissolved from the anode, presuming, of course, that the right voltage is employed. Mr. Brown has not investigated tin solutions to any extent or he would find that they may be maintained close to their theoretical efficiency. Anyone who will read the chapter on tin in Kershaw's Electrometallurgy will be convinced that Ewell's principle may be applied to tin solutions. The reason that tin solutions have not been employed to any great extent in electro-plating is because no solution has yet been discovered that will produce a heavy deposit that is adherent and of the right color. Deposited tin is inclined to be spongy or otherwise unsuitable as a coating for other metals. The manufacture of tin-paste or "spongy tin" used for metallic or silvered paper is carried on electrolytically, and many tons of tinned iron are treated by electrolysis every year for the recovery of the tin.

I will readily admit that it is possible to plate in a bath of nickel sulphate "containing the proper conducting salts." This comes very near being the same as using the double salts. But

^{*}Nickel Plating. THE METAL INDUSTRY, January and February, 1911.

why anyone should use a bath of this nature in preference to the double sulphate of nickel and ammonium with its splendid electrolytic equilibrium is unintelligible. The strangest part of the matter is that Dr. Adams should have patented the use of the double sulphate of nickel and ammonium and carried on some much litigation over said patent when equally as good results can be had by using a nickel sulphate solution and adding a little salammoniac or common salt as stated in Mr. Brown's article. The ideal conditions I have attempted to describe are not universal; far from it; but the theoretical efficiency of solutions can and should be maintained. In nickel plating, provided sufficient anode surface is present and the required metallic content of the bath is maintained a perfect equilibrium is established, and the solution will not become alkaline; neither will "free acid be constantly generated." Neither acid or alkali should be added to a nickel solution. The one exception is boracic acid which all nickel platers should use. When using a stronger current than is required for plating the solution shows a tendency to become al-kaline, due to the rapid decomposition of the ammonium sulphate. Of course if the metallic content of the bath is allowed to fall too low, all kinds of trouble will result. "Gassing" will take place; the deposit will be rough, due to plating too much from the anode, and pitting will follow. Under these conditions the deposit will be brittle and liable to peel in rough usage.

I have no particular reason for withholding my name from this discussion, except that I might be accused of seeking undue publicity; and as this will be my last communication I trust it will not be considered unreasonable if I sign simply,

ELECTRO.

COLORING

TO THE EDITOR OF THE METAL INDUSTRY:

My attention has been drawn to a reply to query on page 171 in your issue of April, 1911, under the heading "Coloring." Under

that heading you have described a process for rust prevention and blackening iron and steel by means of phosphoric acid and other ingredients. The formula which you have given is comprised in the Coslett Patents which are fully protected in the United States. It is unfortunate that you should have published this formula without making enquiries as to the protection of same, as it might lead to the process being used by individuals who would be liable to prosecution for infringement. I shall be glad if you will kindly give this due prominence in your next issue.

T. W. COSLETT.

Birmingham, England, May 24, 1911.

SAWDUST FOR DRYING

To the Editor of THE METAL INDUSTRY:

Referring to your article on "The Use of Sawdust as a Drying Material," on p. 113 of The Metal Industry, March issue, allow me to correct one of your statements. You mention the process of drying by the use of centrifugal force and a hot blast, but state that hollowware cannot be dried in this way.

Allow me to point out to you that in this process—patented by Tolhurst, of Troy, N. Y., steam is used at or above 50 lbs. pressure, or say at about 140 deg. C., and the air is heated to a point approximating 100 degs.; the articles in the hydro-extractor act, however, as accumulators of heat and become heated to a point far above the boiling point of water, so that every trace of moisture in the deepest recesses and the smallest crevices is eliminated. This accumulation of heat is quite curious.

As European agents for this system we have had occasion to place quite a number of these drying plants and know what they can do. As an example of the efficiency of the process I may mention that 5,000 gross of hooks or eyes are dried within three minutes.

Paris, France, May 8, 1911.

ALFRED SANG.



Shop Problems

IN THIS DEPARTMENT WE ANSWER QUESTIONS RELATING TO SHOP PRACTICE OF THE METAL INDUSTRY. ADDRESS THE METAL INDUSTRY.



ALLOYING

Q.—You would do me a favor if you would publish in your next number a bronze mixture for metal, fairly hard, that will run thin plates and stand polishing and plating.

A.—We recommend the following alloy for your work:

Cobb	61	ľ	,	,			*	*		*	٠	ż	*	÷	ĸ	8	*	8	×	u	10	*	÷		×	×	ń	*	ú	*	*	*	85
Tin	*																																0
Zinc	,		,					*	*	,		×			*	×		*	×	·	*	×		*	*	×		*			×	*	51/2
Lead		*									*		*	×		*					*		E	×				R	*		*		11/2

This mixture gives a metal that is very fluid when melted and which run very thin castings.—J. L. J.

BRONZING

Q.—I shall be glad if you can give me a reliable recipe for steel or nearly black bronzing on brass, and necessary quickener?

A.—For a dark steel formula proceed as follows: Dissolve in each gallon of commercial hydrochloric acid, two pounds of powdered white arsenic; this should be accomplished by the aid of heat. After the arsenic is all dissolved add four ounces of single sulphate of nickel to each gallon and one-half ounce of sulphate of copper. Use the solution cold with anodes of cast nickel and a low current of two or three volts tension.

The articles must be chemically clean. It is also advisable to quicken them in a regular nickel bath. This should be only a flash of a few minutes immersion. The solution gives good results on acid dipped surfaces of brass, copper or bronze. A polished surface will give a dark steel surface. It is not necessary to repolish the surface. A good deposit can be obtained in

five to ten minutes, but it should be afterwards lacquered to protect it from atmospheric influence.—C. H. P.

BURNISHING

Q.—What is the karat of gold which is used to plate the various vessels used in church services; also is it customary to burnish the inside of cups, or is buffing alone resorted to,

A.—Vessels such as you describe are gilded with 22 K. gold as 14 or 18 K. would appear too coppery, although an alloy of gold and silver instead of gold and copper would give a yellowish tone. It is customary to burnish the gilded surface, as the burnisher hardens it and makes it less susceptible to wear. Buffing cuts away the gold so you would have to deposit a heavier coating to get the same results as burnishing. A warm gilding solution made up from ammoniurett of gold and cyanide is usually used for the purpose. Care should be taken to have very little free cyanide in the solution.—C. H. P.

CLEANING

Q.—Do you know of anything that will remove dirt and spots from lacquered brass and copper?

A.—The spots you refer to are evidently beneath the lacquered surface and are due to pickling or cleansing operations, probably pin holes in the surface of the metal. It is impossible to remove these spots and produce a satisfactory job. The only method to pursue would be to remove the lacquer entirely, then refinish the surface and relacquer. If the spots are only on the outside of the lacquer, then a little soap and water and a soft cloth will probably remove them. After washing, lightly

dry without using any friction. Then heat the articles to 120 degs., this will brighten up the lacquer again, or the surfaces may be relacquered.—C. H. P.

COATING ..

Q.—Please let me know how to avoid the appearance of blisters in lead-coating and tinning sheets.

A.—Blisters in lead-coating and tinning sheets are most frequently due to the condition of the metal. If drossy, it will be sluggish and hence liable to produce rough and blistered sheets. Other causes that may be mentioned are, not having work chemically clean, rusting of work, metal too cold, etc.—I. L. J.

COLORING

Q.—Will you let me know of a method of whitening or bleaching the surface of small articles of pure tin, such as badges, etc.?

A.—The following method of producing a silver-white surface on tin, brittania metal and tinned sheet metal has been recommended: Disolve two pounds of the double sulphate of nickel and ammonia and seven ounces of sulphate of ammonia by boiling in six and one-half gallons of water and let the fluid cool. The liquid should have a neutral reaction.—J. L. J.

CRUSHING

Q.—Do you know of a machine or a mechanical method of pounding yellow solder for coppersmiths' use?

A.—Any good crusher of the hammer type, such as the Gardener Crusher, made by the Gardener Crusher Company, New York, will crush brazing solder, provided the solder is heated to a dull red heat. It can be screened to the size best suited to the work in hand.—J. L. J.

DIPPING

Q.—Can you tell us how to dip sheet brass to get a clean, bright finish?

A.—To produce a bright acid dip finish on brass goods the following methods should be pursued: Cleanse the surface from oil or grease by immersing in hot solutions of caustic potash, using one-half pound or more to each gallon of water. After cleansing in the alkali bath wash the articles in clean, cold water and let them drain well. Then immerse in the acid dip, which should have been prepared some time previously and should consist of

Yellow aqua fo	rtis	38	%	 	 	 		 				1	gal.
Sulphuric acid	669	6				 			*	*	*	1	gal.
Muriatic acid .				 					*			2	ozs.
Water												2	ats

Move the articles to and fro for a few seconds, then drain quickly to save as much acid as possible; then wash well in cold water and rinse by the aid of boiling water, to which a little soap may be added, and then dry out by the aid of maple sawdust. To retain the bright color it will be necessary to lacquer the surface.—C. H. P.

ENAMELING

Q.—Can you give us any information regarding the enameling of automobile lamps and radiators?

A.—A method that is being used by a number of automobile lamp manufacturers upon brass is first to coat the surface with a dead black lacquer; this dries very quickly and at a low temperature, and when the surface becomes hard the regular black enamel is applied. This method gives a good finish and will not chip. Brass goods for enameling should not be cleansed with gasoline. It is better to use a hot alkali solution. Try Kalye, which is advertised in The Metal Industry. Also correspond with our lacquer advertisers, who will furnish you with valuable information as regards enameling.—C. H. P.

ELECTROTYPING

Q.—What mixture is best to make a mold from which to make an electrotype; and how do you apply graphite to wax for electrotyping?

A.—Guttapercha is the best material for the purpose. This can be readily softened in hot water and gives a good sharp impression. When taking an impression from a metallic article rub a little olive oil over the surface as the gutta-percha can be removed more easily. Pure Ceylon graphite is used dry and rubbed in with a sable hair brush. Pure copper bronze powder gives better results. This is also applied dry to the wax surface.—C, H. P.

POLISHING

Q.—Please tell me how to estimate costs in polishing and

A.—The following rule should be followed: First, estimate on the cost of labor in polishing the article, that is, the time it requires to do a certain piece of work. This does not apply to articles that can be polished by tumbling or other mechanical operations when labor can be dispensed with, excepting for the time required for charging and uncharging tumbling barrels. Each operation connected with the polishing should be determined before you estimate the cost. The plating and finishing should be estimated in the same manner. When you have estimated on the cost of labor, to give you a profit and take on care of supplies and overhead incidentals, just double your labor cost so that if an article, for instance, costs ten cents for labor, charge twenty cents. Let this be a basis and you will come very close to the actual price for a profit.

When installing a new plant the cost of the plant should be tallied. The amount of money invested should return you 5%, then figure on a 10% depreciation per annum on your plant. If you find that doubling up on your labor cost does not take care of your plant investment and depreciation, then raise the percentage of incidental cost, to take care of it. However, in carefully run and systematized plants 100% added to the labor cost will usually take care of all incidentals including profits.

In depositing in silver or gold the value of the weight of metal should be added to the cost of labor and then the 100% added. For antique work an addition of 15 to 25% should be added to the cost of ordinary work, unless every operation is properly taken care of in the estimating of labor. This will give you a basis and should prove very nearly correct in your estimates.—C. H. P.

MIXING

Q.—Will the following mixture withstand 200 lbs. water

																									Lbs.
Copp	er	*							*	*	×	*	*	ĸ		 					8	*		*	85
Zinc				 			*	* .	. ,						*			*	*						91/2
Lead						 	 															*			4
Tin																									11/

A.—Your mixture is a very good one and the metal if properly handled will withstand 200 lbs. water pressure. The average founder uses an alloy for such work that is much lower in copper and hence cheaper.—J. L. J.

OXIDIZING

Q.—Kindly advise us as to the proper way to oxidize polished copper.

A.—To oxidize polished copper, clean the surface of the metal with a solution of hot caustic potash or soda; then wash in cold water and immerse in a dilute cyanide of potassium solution, using about four ounces to each gallon of water. Rewash and immerse in a solution previously prepared, consisting of two ounces of German sulphuret of potassium dissolved in each

gallon of lukewarm water. Immerse the cleansed copper articles in the oxidizing dip until uniformly colored, which usually takes a few seconds. Then rewash in cold water, then dry out by the aid of boiling water and maple sawdust. produce the luster to the articles scratch brush the surface dry, using a soft brass wire scratch brush for the purpose. After finishing, the articles should be lacquered by any of the usual methods, such as dipping, spraying or brushing.-C. H. P.

PLATING

O.-Will you kindly let us know if there is such a thing as a bright nickel solution, which will make it unnecessary to rag wheel the work after it comes from the bath?

A .- A successful bright nickel solution has never been Many operators produced as far as our knowledge goes. have claimed to have produced heavy bright nickel deposits, but we have never seen them. In a properly regulated baths a bright nickel can be obtained upon polished brass bronze or copper, providing the articles are not plated over ten to fifteen minutes. The current must be properly regulated to accomplish this. It has been proposed to add transparent white glue to a nickel bath to produce a continuous bright deposit. It might be worth your time to try this experiment, using a small portion of your present solution for the purpose, 5 gallons would be sufficient. Dissolve the glue in boiling water and add a very small amount to each gallon of solution .- C. H. P.

Q.-Why is it that our silver anodes plate well on rubber. glass or brass, but on zinc of brittania metal the silver will not plate well, as this metal draws the carbon from the anodes, which leaves a black coating on it?

A.—If your anodes give satisfaction in some lines of work they should produce the same results in others. The cause of anodes turning black is not due to the fault of the anode, except in rare cases. The following summary will give some idea of the cause of black anodes: Too much anode surface in proportion to the cathode surface, causing a more rapid oxidization of the anode than the free cyanide contained in the solution will take care of. Too high a voltage, effect similar to above, especially in plating glass or rubber when the articles are previously coated with silver before the regular plating operations, Zinc and brittania offer a greater resistance to the silver bath, so the current must be regulated according to the resistance, so that the normal amount of silver is reduced from the anode without too rapid oxidization. When a solution is low in metal the anodes frequently become black, due to cause enumerated above, too rapid oxidization of the anode in an effort to maintain the loss from the solution, due to a low content of metal, or too large a cathode surface in proportion to the anode. A small amount of hyposulphite of soda in the proportion of two to four ounces in a hundred gallon bath will frequently overcome the trouble if due to the anode. A small amount of lampblack can in no way affect the anode, as silver, unlike iron, does not absorb carbon. The sulphides, if incorporated with the metal, might have a tendency to produce a dark anode.-C. H. P.



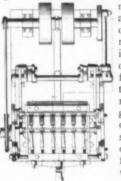
PATEN

REVIEW OF CURRENT AMERICAN PATENTS OF INTEREST TO THE READERS OF THE METAL INDUSTRY.



990.258 mond, Rockford, Ill., assginor to Rockford Silver Plate Company, Rockford, Ill.

An invention covering a machine constructed for the burnish-



ing of the handles and tines of forks. As is shown in cut the a work holder, comprising spaced bars, one of which is provided with article receiving depressions, of article-engag-ing plungers slidably mounted in the other bar, springs engaging the plungers for urging them toward the bar having the depressions, a clamping bar slidably mounted on the bar having the plungers and being movable into and out of engagement with the plungers, springs for urging the clamping bar out of such engagement, and a cam for moving the bar into engagement with the plungers.

990,409. April 25, 1911. SAND BLASTING NOZZLE. J. P. Walsh, Boston, Mass.

A sand blast machine nozzle designed on a different plan from those already in use. Sand blasting nozzles heretofore constructed have been provided with but a single discharge opening, thus restricting the capacity of the device, as without move-



ment of the nozzle only a very limited surface area can be treated, thus rendering the action of the device slow and ardu-

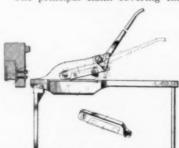
In the course of experiments it has been ascertained that by providing a sand blasting nozzle, as shown in cut, with a series of discharge openings, so

April 25, 1911. Burnishing Machine. C. W. Ham- arranged as to discharge the sand against the surface to be cleaned in an unbroken sheet, the operator is enabled not only to treat or operate upon a larger surface area without movement of the nozzle, but that at the same time he can more effectively discharge the sand blast against the treated surface. It has also been discovered that by providing a plurality of discharge openings power and air can be greatly economized.

> 990,636. April 25, 1911. METAL-CUTTING SHEARS. F. R. Dalbey, Webster City, Iowa.

> This invention relates to improvements in metal-shearing machines, the object being to provide a simple and durable machine, as shown in cut, operating to effectively shear the work operated on, a further object being to provide means for adjusting the movable shearing member toward a stationary bed

The principal claim covering this machine is as follows: In

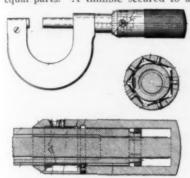


a shearing machine the combination of a suitably supported bed having a head block offset to one side of the bed, the head block having an elongated recess on its inner face and a smaller recess within the elongated recess, and the bed being provided with a shearing edge, a swinging arm pivoted at its inner end within

the elongated recess and having a shearing blade secured flush with its inner face to cooperate with the shearing edge, a follower member disposed within the smaller recess and engaging the adjacent face of the swinging arm, set-screws threaded in the head block and engaging the follower member, a lever pivoted to the head block, and a link pivotally connected to the lever and the free end of the swinging arm, substantially as described.

990,655. April, 1911. MICROMETER CALIPERS. F. O. Jaques, Sr., Cranston, R. I.

In the usual construction of micrometer calipers for measuring decimal fractions of an inch, as hereofore constructed, the barrel is graduated by transverse lines, the longer of which are one-tenth of an inch apart and are marked by numerals. Three shorter lines divide the space between the long lines into four equal parts. A thimble secured to and turning with the screw-

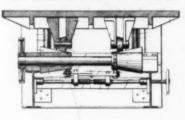


threaded spindle forms the handle of the caliper and its forward beveled end is graduated into twenty-five equal parts, each line of which represents a longitudinal movement of the spindle equal to one one-thousandth of an inch. In reading the micrometric fractions of these calipers errors are frequently made, because these calipers do not clearly indicate the measurement.

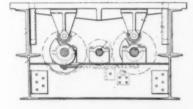
The object of this invention is to improve the construction of a micrometer caliper, as shown in cut, whereby the accurate reading of the caliper is greatly facilitated. A further object is to simplify the construction of any easy reading micrometer caliper, thereby improving the accurate reading of the caliper, simplifying and reducing the number of operating parts, which have a positive action and are protected from injury and misplacement and reducing the cost of manufacturing.

991,381. May 2, 1911. Jarring Machine. C. S. Simmer, Cold Spring, N. Y.

The machine shown in cut is an improved type for settling,



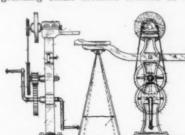
shaking down or agitating, and is known as a "jarrer." The object of the invention is to provide a device which will be simple in construction, inexpensive to manufacture, strong, durable, readily accessible for the purpose of repairing and renewing of the parts, and both reliable and simple in its operation.



A further object is to provide a device in which the amount or extent of the jar can be varied according to the character of the work which it is desired that the machine shall accomplish.

991,068. May 2, 1911. EMERY WHEEL GRINDING MACHINE. G. E. J. Jobin, Chicago, Ill.

This invention relates to improvements in emery wheel grinding machines and more particularly to the manually operated class, the object of the invention being the production of a machine of this character so designed as to render the task of grinding small metallic articles as easy as possible, and a ma-



chine which may be readily converted into a power-driven machine. A further object is to provide a grinding machine, shown in cut, which shall be simple of construction, inexpensive to manufacture, strong and durable, and efficient in operation.

The machine is covered by the following frame, of a grinding mech-

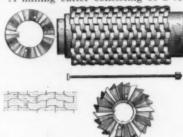
anism mounted therein; a crank-shaft and pedals for operating said grinding mechanism; a seat; an arm secured to the seat and adjustably secured to the frame, there being a slot provided in the frame to receive the arm, the slot increasing in height from the center to each end; means for locking the arm in the slot, and a vertically adjustable support for the seat, substantially as described.

991,463. May 2, 1911. MILLING CUTTER. Diethelm Steiner, Philadelphia, Pa.

The apparatus shown in cut is designed to give a longer life to the expensive spindles, upon which milling cutters operate. The invention is covered by the following claims:

he invention is covered by the following claims:

A milling cutter consisting of a series of toothed disks assem-



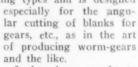
bled to provide interrupted rows of teeth, the teeth of each disk being opposite the spaces between and projecting into the paths of movement of the teeth of a disk adjacent to it; with means for holding the disks together.

A milling cutter consisting of a shaft; and

a series of disks keyed thereon, each of the disks having a cutting endge and sides with alternating projections and recesses, the projections on each disk fitting into and locking with the recesses of the succeeding disk, and means to bind said disks to hold them against separation axially of the shaft.

991,464. May 2, 1911. Gear-Cutting Machine. Clarence E. Bilton, Bridgeport, Conn.

The gear-cutting machine shown in cut and covered by this patent is an improvement over existing types and is designed

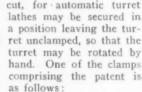


It has been sought to produce a heavier and more substantial machine than has heretofore been manufactured by the same inventor under another patent and to include im-

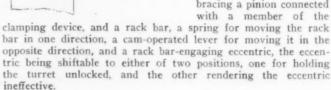
proved driving mechanism whereby increased power is obtained, and to provide means for supporting the blank at different angles with relation to the cutter so as to produce angular cuts upon the periphery of the blank as before described.

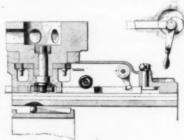
991,886. May 9, 1911. TURRET LATHE. J. C. Potter and J. Johnston, Pawtucket, R. I., assignor to Potter & Johnston Machine Company, Pawtucket, R. I.

The object of this invention is to provide a simple and convenient device by which an automatic turret clamping and unclamping mechanism, as shown in cut, for automatic turret



In a turret lathe, the combination of a turret, an automatic clamping device for the turret embracing a pinion connected with a member of the







NEW AND USEFUL DEVICES, MACHINERY AND SUPPLIES OF INTEREST TO THE READERS OF THE METAL INDUSTRY.



NEW MACHINES AND APPLIANCES DEVOTED TO THE FOUNDRY

A COLLECTION OF THE MOST IMPROVED DEVICES EXHIBITED AT THE PITTSBURG EXHIBITION OF THE FOUNDRY AND MACHINE EXHIBITION COMPANY.

SOME NEW OSBORN MACHINES

The Osborn Manufacturing Company, of Cleveland, Ohio, had a most complete exhibit of molding machines. A number of these machines were found new in design, not having been shown to the public before.

The Osborn Roll-over Rock-down Molding Machine, shown in Figs. 1 to 6 inclusive, attracted a great deal of attention at the convention. It is claimed by the makers that no other molding machine on the market has so many points of advantage, convenience and economy.

The machine is low-down as to ramming position and is mounted on large roller-bearing wheels, making it very easy to

An absolutely true pattern-draw is assured without the use of any leveling device, as the pattern is drawn from any position at which the flask rests when it is set down upon the floor.

Another feature of the greatest importance is that the pattern is drawn from the mold before the clamps are removed from the flask.

After the mold has been rolled over on its trunnions, it is held in horizontal position by an automatic locking device while it is being lowered to the floor. In every detail the design and construction are such as to reduce labor to a minimum, and the machine is much speedier than any power roll-over, both in rolling over and in drawing the pattern. The open pattern-drawing frame for making deep green-sand cores, the perfect balance of

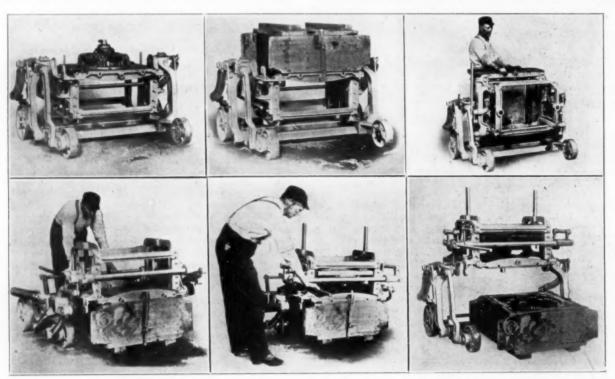


Fig. 1.—The Machine Ready for Ramming. Fig. 4.—Rocking the Flask to the Floor.

Fig. 2.—The Flask Rammed. Fig. 5.—Drawing the Pattern.

Successive Stages in the Operation of a New Roll-Over, Rock-Down Molding Machine Built by the Osborn Mfg. Company, Cleveland, Ohio.

move the machine and follow alongside of the sand heap or to any other part of the foundry floor. Furthermore, all work can be done from one side and the operator can fill and ram the mold, roll it over, rock it down and draw the pattern, without

a bit of lost motion. It is so designed that one operator can handle large molds of very considerable weight easily; a thing which it is not possible to do with any roll-over machine in use at the present time.

Furthermore, after the mold is rolled over, it rocks down easily into position on the floor, where it is to be poured.

This feature applies to the drag part of the mold as well as to the cope; and the drag requires no handling after being released from the machine; a feature which is not found in other molding machines.

the mold, and many other features of convenience or efficiency, make this one of the most highly-improved molding machines ever built.

The set of illustrations accompanying this article shows every

step in the making and drawing of the mold.

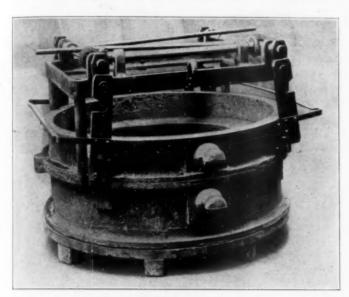
The Osborn Roll-Over Rock-Down Molding Machine is made

No.	Taking Flasks	Depth	Maximum Pattern-draw				
20	26 ins. x 30 ins.	6 ins. to 15 ins.	10 ins.				
21	28 ins. x 40 ins.	6 ins. to 15 ins.	10 ins.				
22	30 ins. x 48 ins.	6 ins. to 15 ins.	10 ins.				

Sizes given are for iron flasks; wood flasks are slightly smaller.

By means of the Osborn Pattern-Drawing Machine, shown in Figs. 7 and 8, it is possible to draw the mold on the floor where it is to be poured, and to secure a smooth, even draw whether the flask is level on the floor or not.

The direct advantage of securing this accurate draw is a great saving, and in several different ways. It eliminates sticking in the mold; it lessens wear on patterns, saves slicking and patch-



THE OSBORN PORTABLE PATTERN-DRAWING MACHINE ON THE FLASK, READY TO DRAW THE PATTERN.

ing of molds, and-because of the evenness of the draw-saves a large amount of chipping-time on the casting. The job shown in the accompanying illustrations is a motor-end bracket turned out by one of the largest manufacturing concerns in the country. This particular casting weighs one hundred and seventy pounds and the actual amount of chipping time saved by the use of the pattern-drawing machine was forty minutes. Another interest-

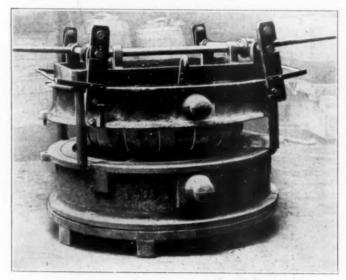


FIG. 8. THE OSBORN PORTABLE PATTERN-DRAWING MACHINE -SHOWING THE PATTERN DRAWN

ing feature is the fact that it does not matter whether the mold sets level on the floor or not when it is drawn. The guide keeps the draw always in perfect alignment with the edge of the flask.

The machine is regularly made in sizes from eighteen by eighteen inches up to forty-two by seventy-two inches, with a maximum pattern-draw of six, eight, ten, twelve and fifteen inches respectively.

ELECTRIC DRIVE JARRING MACHINE

Henry E. Pridmore, Chicago, Ill., showed a new departure in a jarring machine operated by an electric motor. As will be seen in the cut, the motor is mounted so as to be directly connected to the driving gear of the machine; the motor is $2\frac{1}{2}$ horsepower for driving a 3,000-pound machine.

The jarring machine is set in the usual form of pit for jarring apparatus. The motor speed is reduced by means of a worm gear. The driven shaft of the gear carries a cam underneath



ELECTRICALLY DRIVEN JARRING MACHINE BUILT BY HENRY E. PRIDMORE, CHICAGO.

the table and this has a roller follower forming one end of a bell crank level pivoted to the inside of the machine frame and attached by pin and links to the under side of the table for lifting it. A friction clutch, the lever handle of which is shown in the cut, allows for the desired convenient starting and stopping of the machine. Large machines made on the same principle requiring more than one bell crank lever will be made in four different sizes

-446	04560				
30	ins. x 36 ins.	 capacity		3,000	pound:
36	ins. x 48 ins.	 66		6,000	4.6
42	ins. x 60 ins.	 66	****	9,000	16
60	ins. x 72 ins.	 34		20,000	411

METALS AND ALLOYS

The Goldschmidt Thermit Company, New York, had a very complete and most interesting exhibit of metals and alloys free from carbon produced by the Thermit Process. Among the combinations shown were the following: Chromium, 97-98 per cent. Titanium. Chromium-Manganese, 30/70. Chromium-Copper, 10 per cent. Chromium.

Chromium-Molybdenum, 50|50.

Manganese, 97-98 per cent.

Manganese-Copper, 30 70.

Manganese-Titanium, 30|35 per cent. Titanium.

Manganese-Tin, 50 50.

Manganese-Zinc, 20 80.

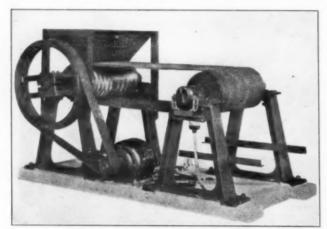
Manganese-Boron, 30-35 per cent. Boron.

All alloys, with the exception of Ferro-Alloys, are produced technically free from iron and other impurities:

MAGNETIC SEPARATOR

The magnetic pulley or separator shown in the cut is designed for use in any operation requiring the separation of magnetic material from a mixture containing both magnetic and non-magnetic matter. It is of a special value in the handling of coal, rock, ore, etc., where it is essential that no large pieces of steel or iron enter the crusher. It can also be employed for removing iron shot from molding sand, for separating brass chips from machine shop turnings, and for separating magnetic ores.

The method of operation is as follows: The mixture on which the separation is to be effected is fed by a suitable hopper on to the conveyor belt, by means of which it is passed over the pulley. The magnetic material is drawn strongly toward the face of the pulley, and thus hugs the belt closely up to the point at which the belt leaves the pulley at the lower side. At this point it is snapped off by the belt, and falls into a chute or other



MAGNETIC SEPARATOR MANUFACTURED BY THE CUTLER HAMMER CLUTCH COMPANY, MILWAUKEE, WIS.

arrangement for conveying it away. The non-magnetic material is projected some distance in front of the pulley, thus being widely removed from the magnetic material and making a very clean separation.

The pulley consists of alternate coils and steel discs concentric with the shaft, the former being wound on steel spools doweled to the discs, which are in turn keyed to the shaft. Each coil is enclosed and protected by a cylindrical brass coil shield, having a tight fit on each of the two adjacent poles. Current for the coils is obtained through carbon brushes held on a pair of slip rings, by self-adjusting holders.

These pulleys are regularly built 12 inches in diameter, in lengths from 16 inches to 36 inches, having a current consumption of 325 to 750 watts, and capacities of 1340 to 3000 cubic feet per hour. They can, however, be built to order in large diameters. They are designed to operate on any direct current voltage up to 250. This machine was exhibited at the booth of The Cutler Hammer Clutch Company, Milwaukee, Wis.

HAUCK KEROSENE BURNERS

The torch illustrated in the cut is operated by kerosene oil and while very simple in design it is strongly built to stand rough usage. It is claimed by the manufacturers of these torches and other heating devices, the Hauck Manufacturing Company, Brooklyn, N. Y., that they have solved the problem of using kerosene with better results than gasolene. The torch is so constructed that the tank will remain perfectly cool while the burner is being operated. Only one pound pressure is required in the torch.

There are 116,000 B. T. units in one gallon of kerosene, and only 83,870 B. T. units in one gallon of gasolene, showing in favor of the kerosene 32,220 more B. T. units per gallon than in a gallon of gasolene. The Hauck kerosene torches, it is claimed, produce perfect combustion of kerosene, so that the superiority of the kerosene oil appliances is very readily appreciated, both from an efficiency and economical point of view.

The flame of No. 14 torch will melt a piece of copper ½ x ¼ inches in three minutes and a 1-inch brass rod in two minutes.

The same firm manufactures the "Hauck" patent brazing table for kerosene oil shown in Fig. 2. This outfit has been designed especially for brazing operations and pre-heating, in connection with cast iron, brass and other metals. It is claimed to have a greater capacity for work than any other similar



THE HAUCK KEROSENE FORGE.

tool on the market. As an example of work performed may be cited, a two-inch shaft was brought to a bright cherry red heat in four minutes.

This table is strongly built and consists of a seamless tank containing hand air pump, a brazing table mounted on top of the tank, attached with two burners connected with the oil tank by



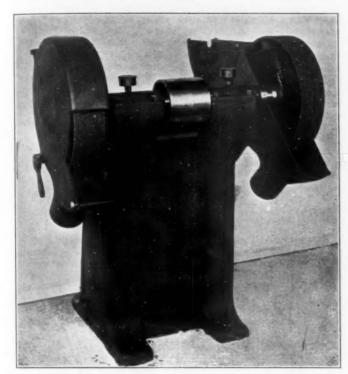
THE HAUCK KEROSENE TORCH.

flexible steel hose. The burners are fastened on suitable adjustable brackets. This brazing table is furnished with a special fire brick tile which makes it especially valuable for brazing. However, it can be quickly changed to a melting, tempering, tool dressing, or case hardening furnace, by ordering fire brick tiles, suitable for this purpose.

NEW POLISHING STAND

A completely new design of a polishing stand shown at the exhibition was the No. 11 polishing stand with band polishing wheels manufactured by the Gardner Machine Company, Beloit, Wis. The machine shown in cut is of heavier and more rigid construction than is customary in this class of machinery. The bearings are extra long and are lubricated with compression grease cups. The driving pulley and spindle are of extra large dimensions.

Wheels are made of cast iron in two sizes, 14 inches diameter by 3 inches face and 16 by 3½ inches face. An abrasive cloth band of respective size is stretched around the wheel over



NO. 11 POLISHING STAND. MANUFACTURED BY THE GARDNER MACHINE COMPANY.

a backing of felt. A patented device provides a constant tension on the abrasive band, keeping it stretched tight from the time the band is put on until worn out. A new band can be put on in less than a minute and without removing the wheel from the machine. Buff wheels, leather wheels, etc., can also be efficiently used on this machine.

The wheels are fully enclosed by a dust hood when in operation, presenting only a small working portion. The top half may be thrown back and the entire hood, which is mounted on a slide, may be dropped below the bottom of the wheel, the exhaust pipe telescoping inside the hood. This is done when it is desired to remove the wheel. Opening for exhaust connection is in a tangent line to the working surface of the wheel so that in polishing long work the piece may extend down into this and the position of the dust hood does not have to be changed. This machine is so designed and arranged that the polisher may sit down while at work. It can also be arranged for underbelt drive, the belt passing down through base of machine and completely enclosed in shield.

TEST OF MONARCH FURNACE

The Monarch Engineering and Manufacturing Company, manufacturers of the "Steele Harvey" crucible metal melting and refining furnaces, Baltimore, Md., have put out a certified report of a test made on one of their furnaces. The test was made at the plant of the Buckeye Iron and Brass Works, Dayton, Ohio, under the supervision of L. R. Cope, the foundry superintendent. The furnace used was a 1911 Model No. 60 Monarch stationary furnace, preheated air pit or part pit type, such as was shown at the Pittsburg exhibition. The test was started on the 28th of April, 1911, at 12.10 p. m., on a cold furnace and started up

the following morning and ending at 11.20 a. m., averaging a working day of nine hours. The following figures show the results of the test:

Hea	ats.		letal Out, Pounds.		Per Cent. Loss.	Time of Melting.
1	1841/2	phosphor	180	4½	2.44	1 hr. 5 min.; begin- ning 12:10 p. m. Friday, April 28.
3 4	1751/2	ededed	1731/2	1 2 2	53/100 1 14/100 1 47/100	55 min. 45 min. 35 min.; through at 4:30 p. m.
5	182 p	hosphor	178	4	2 14/100	1 hr. 5 min.; begin- ning 6:30 a. m. Saturday, April 29.
6 7 8 9	180 y 170 a	red	1751/2	3½ 4½ 7½ 2½	1 96/100 2½ 4 41/100 1 39/100	48 min. 56 min. 43 min. 40 min.; through at

A separate oil tank was used for this purpose and the oil was measured accurately for the day's run.

Total weight of metal melted, 1,573 lbs.; total amount of oil used, 31.55 gals.; average amount of oil used per 100 lbs., 2 gals.; average per cent. loss on day's run, 2.1 gals., including all kinds of metal. The nine heats were run inside the regular nine-hour day, from noon on Friday to noon on Saturday. In all but three cases from 4 to 6 ingots of copper were melted each charge. The balance was borings, gates and scrap.

THE DEANE SAND SIFTER

The sand sifter shown in the cut was exhibited at the Pittsburg Convention of Foundrymen and Manufacturers by the George F. Blake Manufacturing Company, East Cambridge, Mass, and comprises one of an entirely new line of pneumatic, steam and electric shakers for riddling sand in the foundry or wherever the three classes of motive power are available, As will be noted the construction is novel and it is claimed by the manufacturers that the sifter possesses many points of superiority over former machines used for this purpose. The machine shown in the cut is operated by compressed air and the power end is an ingenious application of the engine of the Deane steam pump. In addition to the features of



DEANE SAND RIDDLE.

simplicity and strength the Deane valve gear will run efficiently under all possible conditions even when badly worn. By means of this construction an engine of great power, having moderate consumption of air is obtained, so that the Deane sand riddler, in addition to working economically at all times until worn out, will operate successfully under low air pressure, or severe conditions of overload.

The capacity of the riddler fitted with round riddle with about fifty pounds of air or steam pressure is as follows:

With twenty-inch diameter of riddle, two men can shovel one ton of coarse sand before moistening through a No. 4 riddler in 3½ minutes.

One ton of coarse sand after moistening, flour added, No. 2 riddler, $4\frac{1}{2}$ minutes.

One ton of molding sand ready to use, No. 4 riddler, 4 minutes.

The above machines are built in many different styles and types to meet varying conditions, several of which are illustrated in bulletin D. 164, which may be had upon request to The Deane Steam Pump Company, Holyoke, Mass.

STATIONARY BRASS MELTING FURNACE

The furnace here shown was exhibited for the first time at a foundry supply exhibition by Tate, Jones & Company, engineers and constructors, Pittsburg, Pa. The furnace uses oil for fuel and is claimed to have several points of superiority. In the first place the combustion chamber is enlarged at the point the oil enters the furnace, giving room for expansion of the burning oil, which is injected tangently, circulating around the side of the furnace and not coming into direct contact with the crucible until the ombustion is complete. This insures long life to the crucible which cannot be obtained in a confined space.

The Kirkwood No. 3 oil burner, is employed, the oil being fed at 20 lbs. pressure and a very small quantity of compressed air at about 15 lbs. pressure being supplied only for atomizing, the air for combustion being supplied by a fan blast at four to six ounces. This air blast circulates between the inner and the outer shell of the furnace before going into the combustion chamber and this circulation raises the temperature of the combustion air and at the same time keeps down the temperature of the outside of the furnace.



THE TATE, JONES & COMPANY STATIONARY BRASS FURNACE.

The top of the furnace is provided with a water-cooled ring to insure the maintenance of a smooth bearing and a close fit with the cover so that the heat does not escape between the furnace proper and the cover, thus eliminating the cutting of the brick lining.

The furnace is constructed in the most substantial manner with heavy castings and steel plates and is lined at the different points in the furnace with special brick and tile of special construction for the service and temperatures of the different zones.

CRYSTOLON

The latest products of the Norton Company, manufacturers of alundum and other abrasive materials, Worcester, Mass., were shown in a complete exhibit of their grinding appliances. Crystolon is the registered name for Norton carbide of silicon (SiC). With this material, in addition to the different kinds of alundum, the Norton Company are in a position to satisfy every requirement of the trade and to offer to the users of grinding wheels,

or abrasives in any form, a choice of the latest and best cutting materials.

Crystolon is manufactured by the Norton Company in their electric furnace plant at Chippawa, Canada. The current for operating the Crystolon furnaces, as well as those for the manufacture of alundum at Niagara Falls, N. Y., is furnished by the hydraulic power plants of Niagara.

CROWN SAND RAMMERS

The pneumatic sand rammer for foundry and concrete is now a permanent fixture among labor-saving devices. Some of the advantages claimed for it are lower production cost, larger output and improved quality of product. The "Crown" Sand Rammer, shown in cut, takes its name from the fact that it uses the well known Ingersoll-Rand "Crown" valve, used with such success in the "Crown" chipping and riveting hammers. This is a hardened steel spool valve, working under unbalanced air pressure in a hardened steel valve box clamped between the cylinder and the head block of the tool. The valve mechanism is entirely enclosed and protected against dirt, a screen being interposed between the air inlet and valve mechanism.



THE CROWN PNEUMATIC SAND RAMMERS.

The cylinder is of a special steel, hardened and ground in the bore; and the piston is hardened, with the rods left tough. Steel parts are oil-treated and annealed. Two flats milled on the rod prevent the turning of the piston in the cylinder and the rotation of the butt or pein. The weight is carefully adjusted so that there is the minimum of jar or reaction in running. The blows are very sharp and rapid, and their number and force under complete control by the throttle.

The "Crown" Bench Rammer (Type 10-SR) is a small machine weighing ten pounds and intended for working on small flasks such as are ordinarily handled on the bench. It is also used for core work.

is also used for core work.

The "Crown" Floor Rammer (Type 20-SR) is a longer, heavier tool, weighing about twenty-two pounds and intended for larger flasks upon which the man works standing.

Further particulars may be had by addressing the manufacturers, the Ingersoll-Rand Company, New York, N. Y.

CARBORUNDUM REFRACTORIES

The Carborundum Company, of Niagara Falls, N. Y., had a very interesting exhibit of carborundum products, both in crude and manufactured form. The crude shape included firesand used for lining and repairing metal melting furnaces. The application of carborundum to finished shapes included all forms of abrasive materials. A new abrasive wheel lately introduced is called Somite, and is one of the many forms on which carborundum is used. Carborundum, as is well known, is a product of the electric furnace formed at a temperature of 6,000 degs. Fahr.

Carborundum firesand is now said to be the standard refractory material in brass furnace work and is used in carload lots by the leading brass foundries. One of its most successful applications is in the lining of the ordinary type of crucible brass furnace, replacing the fire brick lining. For this purpose, a mixture made in accordance with the following formula is recommended:

Carboru	ndu	ım fii	resa	nd .	 	 		 .70	per	cent.
Ground	fire	clay			 	 	 	 15	"	46
Silicate										
Water					 	 	 	 7.	66	66

The silicate of soda is first added to the water and thoroughly dissolved. This solution is then mixed with the clay and fire-

sand until the material acquires the consistency of molding sand. The constituents, when thoroughly incorporated form a plastic mixture which is easily molded and has sufficient cohesion when tamped into place to retain its shape antil fired, A sheet iron form is provided of the same diameter as the interior of the furnace, consisting of a sheet of iron bent into cylindrical form, so that after use it can be sprung inward and be easily withdrawn. The center may also be constructed of wood and in such case should be well greased so that it can be drawn without the lining adhering to it. The mixture is rammed up solidly between the center and the outside shell of the furnace, after which the center may be at once removed and the lining dried out with a slow wood fire. It can then be immediately put in service. In cold weather it is well to warm all the materials before mixing. It is the practice in some foundries to provide channels or vents to assist in drying out the lining. This is done by placing four or five wooden strips about 2 ins. by 1 ins., spaced equally around the furnace inside and against the shell. are withdrawn after tamping in lining.

OIL-BURNING BRASS FURNACES.

In the various types of tilting and rotary furnaces for melting brass now being so extensively introduced the linings are subjected to the severest possible conditions. A lining rammed up from carborundum firesand is claimed to give much longer life than a fire brick lining, and is the most easily replaced or repaired.

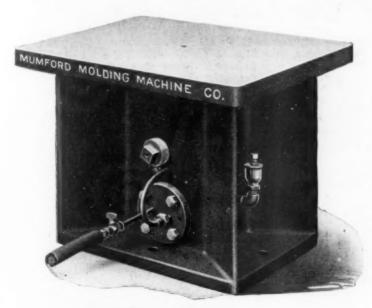
A mixture in accordance with the following formula is recommended for this purpose:

Carbort	ındı	um fi	res	and						 		0	 .8	86	per	cent
Silicate	of	soda	52	deg	S.	Ве	aı	ım	e	 				7	46	6.6
Water																66

In many cases it is found advantageous to replace about 15 per cent. of the firesand with an equivalent amount of kaolin.

CORE BENCH JOLT RAMMER

It is only recently that the facility of settling sand into the deep pockets and among the rods and wires of small cores on the core bench has been appreciated. The little machine shown by the cut, placed on a concrete pier, iron post, or, even a wooden one, and piped to air, affords a spot in a core bench on which any core adapted to such treatment may be rammed better than



MUMFORD CORE BENCH JOLT RAMMER.

it can be rammed by hand, while the operator is merely putting the sand and rods in. The starting and stopping of the machine is accomplished by a knee valve under the bench and both hands of the operator are free to manipulate material and core boxes. While the rated capacity of the machine is 300 lbs. with 80 lbs.

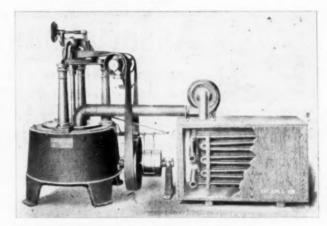
air pressure, it has been found of great advantage on small slender cores for the production of which, boxes, sand and all weigh only a few pounds. The valve in this machine is simply a plug of case hardened machinery steel, having a 3/16-in. vertical stroke, and to all intents and purposes the construction is that of a valveless plunger. The economy in air, however, is superior to that of the most elaborate valve mechanisms yet used on jolt ramming machines. Following is a detailed description of this machine:

Size of table 15 ins. x 20 ins.; diameter of plunger 3 ins.; lifting capacity with 80 lbs. air pressure, 300 lbs.; finished shipping weight of the machine 325 lbs.

The jolt rammer here described is manufactured by the Mumford Molding Machine Company, Plainfield, N. J., who will be glad to answer all enquiries.

CENTRIFUGAL DRYER

A machine that has been singularly successful for the drying of small metal articles is known as the Tolhurst Centrifugal Dryer, and is shown in the accompanying illustration. The principle of the dryer is based upon the connection of hot air with centrifugal force and such combination accomplishes what has hitherto been possible only with sawdust in a tumbling barrel. The apparatus and process, for which patent has been applied for, consists of first, a self-balancing centrifugal dryer; second. an enclosed steam coil; third, a suitable blower to force hot air from the coil into the centrifugal.



THE TOLHURST CENTRIFUGAL DRYER.

The articles to be dried are placed in the basket of the centrifugal, the speed of which when running, is 700 to 900 r. p. m. according to size. As machine is started, the hot air is turned into the revolving basket. Within ten minutes, the entire load has been thoroughly dried. If the articles dried have been plated like safety pins, ferrules, eyelets, etc., they are given a finish and lustre surpassing that obtained by tumbling in sawdust. By this process small articles of any shape or construction can be perfectly dried and brightened in an incredibly short time. Among the applications of the Tolhurst dryer are the drying of small acid dip and plated parts such as safety pins, collar buttons, steel jackets of rifle bullets, blanks for table spoons, knives and forks and coins of various descriptions.

A curious discovery was made during the trying out of the Tolhurst machine by the officials of the United States Mint. The machine was put in use for the drying out of various coins manufactured at the Mint, and it was found that when the machine was used with hot air the penny blanks tarnished while the nickels, gold and silver came out very bright. When the pennies were dried with cold air the tarnish disappeared and the blanks were as bright as those of the other metals that had been dried with hot air. It was also discovered that copper containing zinc appeared to be tarnished by the heat.

The Tolhurst Centrifugal is self-balancing and strongly built, as it must be, to handle heavy loads without injury to itself or its surroundings. The design of this machine is such that the

hot air forced into it has a free and unobstructed circulation through and out of it, passing through the mass of revolved articles with such rapidity that the temperature of the metal is raised from ten to twenty-five degrees above that of the heated air. There is no other Centrifugal built in which this process can be successfully used.

The Tolhurst Centrifugals are built in three sizes for metal work:

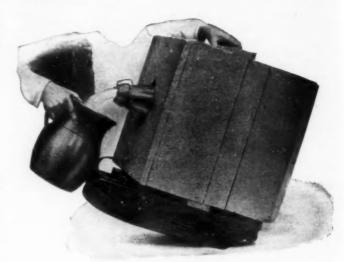
Diameter

L'initiate a				_
of	Speed		Floor	Space.
Basket.	R.P.M.	Extractor		Coil Box.
26 in.	900	3 ft. 5 in. x 4 ft. 1	0 in.	3 ft. 10 in. x 22 in.
32 in.	750	3 ft. 11 in. x 5 ft.	6 in.	3 ft. 10 in. x 22 in.
40 in.	700	4 ft. 8 in. x 6 ft.	5 in.	3 ft. 10 in. x 2 ft. 11 in.
and are	belt, engi	ne or motor driv	en.	Full particulars may be
had by v	vriting to	the Tolhurst Ma	achine	Works, Troy, N. Y.

"NONE SUCH" CARBOY ROCKER

The "Nonesuch" patent stop carboy rocker with vent-tube, shown in cut, is claimed by the manufacturers to be worth many times its cost to users and bottlers of acids and ammonia from carboys. One man can easily move a full carboy to any desired position on the floor and entirely empty it from the first to the last pitcherful, without spattering a drop on the hands, face, clothes or floor.

It can be attached to a carboy or changed from one carboy to another in less than half a minute and it is believed that if



"NONESUCH" CARBOY ROCKER.

once tried by manufacturers of metal goods, wholesale and retail druggists, that they will never do without it. Accident and life insurance companies should write *some* insurance cheaper on account of its use. This device is sold for \$4 net f. o. b. cars by Rockhill & Vietor, sole selling agents, 114 John street, New York City.



Associations and Societies

DIRECTORY OF AND REPORTS OF THE PROCEEDINGS OF THE METAL TRADES ORGANIZATIONS.



THE FOUNDRY AND MACHINE EXHIBI-TION COMPANY

President, Geo. R. Rayner, Niagara Falls, N. Y.; Secretary, C. E. Hoyt, Lewis Institute, Chicago, Ill.; Treasurer, J. S. McCormick, J. S. McCormick Co., Pittsburg, Pa. All correspondence should be addressed to the Secretary, C. E. Hoyt, Lewis Institute, Chicago, Ill. The objects of the Association are for the commercial and technical education of iron and metal industries by co-operating with all foundry and manufacturing interests in making an annual exhibit of supplies and equipments in connection with the meeting of the American Foundrymen's Association. The next exhibit and convention will be held probably in Buffalo, N. Y., June 22-27, 1911.

Secretary Hoyt has sent out the following notice: "We have had numerous inquiries from firms who paid membership dues in the Foundry and Manufacturers' Supply Association for 1910, as to their membership in the American Foundrymen's Association. Owing to the apparent doubt as to the status of these members we make the following announcement:

"Before declaring our final dividend we paid the American Foundrymen's Association the annual dues to that association, making all Foundry and Manufacturers' Supply Association firms members in good standing until July 1, 1911.

ciation firms members in good standing until July 1, 1911.

"We, however, paid those dues at the old rate of \$5.00 per annum. At the 1910 meeting of the American Foundrymen's Association these were increased to \$10.00. This additional rate was not paid as we had collected dues on the basis of the old rate, and the same was acceptable to the A. F. A. with the understanding that those of our members desiring bound volumes of the transactions of the A. F. A. and the A. B. F. A. would be required to pay \$5.00 additional to the American Foundrymen's Association. After July 1, 1911, you will renew your memberships in the A. F.

A. or the A. B. F. A. as individuals. This change is made at the suggestion and request of the officers of the American Foundrymen's Association."

ELECTROPLATERS' ASSOCIATION

President, Charles H. Proctor, Arlington, N. J.; Treasurer, H. H. Reama, New York, N. Y.; Corresponding and Financial



Secretary, Royal F. Clark; Recording Secretary, Edward Faint. All correspondence should be addressed to the Corresponding Secretary, Royal F. Clark, 246 Fulton avenue, Jersey City, N. J. This is an educational society, the objects of which are to promote the dissemination of knowledge concerning the art of electro-deposition of metals in

all its branches. Meets at Grand Opera House Building, 309 W. 23d St., on the fourth Friday of each month, 8 p. m.

The regular monthly meeting of this association was held Friday, May 26th. The newly elected officers were duly installed and entered upon the discharge of their duties. A new office was created, namely, editor-in-chief of the Electroplater's Quarterly, to which office G. B. Hogaboom was elected with power to appoint his assistants. The resignation of A. G. Hoffmann as librarian was accepted and J. A. Stremel was unanimously elected to fill the vacancy.

It was decided to defer the organization of the Rochester branch until next fall. The constitution and by-laws of the Philadelphia branch were read by the corresponding secretary, and he was directed to convey to the Philadelphia branch the thanks of the parent organization for their courtesy and to assure them that the constitution and by-laws were in accordance with those of the National Association.

Charles H. Proctor gave a short talk on Voltite, the discovery of Arthur T. Firth, of Australia, of depositing pow-

ders. The subjects for the next meeting will be "Rust Proof Black," William Schneider and Charles A. Stiehle; "Electro-Deposition of Non-Metallic Objects," and a short address on chemistry by Geo. B. Hogaboom. The papers will be followed by general discussion by the members.

The regular, monthly meeting of the Philadelphia branch was held at Dooner's Hotel, Friday, May 26. Professor H. K. Richardson of Pennsylvania State College was elected as an honorary member. One associate member was also elected. A committee, composed of S. D. Benoliel, Walter C. Gold and H. C. Knecht, was appointed to try to interest outside platers in the association in order to increase the membership. William Buckley will speak on nickel solutions at the next meeting.

NEW ENGLAND MANUFACTURING JEWEL-ERS' AND SILVERSMITHS' AS-SOCIATION.



President, Geo. H. Holmes; Treasurer, Wade W. Williams; Secretary, Frederick A. Ballou, all of Providence, R. I. All correspondence should be addressed to the Secretary, Providence, R. I. The objects of the association are for the commercial and educational welfare of manufacturing jewelers and silversmiths.

Secretary Ballou reports that aside from its annual meeting which is held the latter part of October of each year and which is preceded by a reception and dinner and followed by addresses of prominent speakers, the association meets as a body for two other functions, its mid-winter banquet and summer outing. Both of these gatherings are mainly for pleasure and social intercourse, but the important work of the association is done through its Executive Council which

meets weekly, where all matters of general interest to the association are carefully considered, the council appointing sub-committees to report on those of special importance.

The council has given special consideration during the last few months to industrial education as it pertains to the industry. To stimulate work already undertaken by different institutions, they propose to give medals for work of special excellence and it is hoped that the time is not far distant when some sort of an apprenticeship system can be established between the schools of Providence and the manufacturers (who show a disposition to co-operate) which will make it possible for young men to spend part of their time in the factory and part in the schools. The schools of Pforzheim and other German cities are far ahead of us in this educational work, but we hope to show results in this direction in the near future.

A committee of the council is able each year to give the members of the association such information as they desire concerning visiting buyers, thus saving them much inconvenience, and the council each year endeavors to arrange for a uniform date of summer closing of the different factories for vacations and repairs which has proven to be a benefit both to the members of the association and their customers. It is the earnest effort of the council to at all times promote the best of feeling between employer and employee, and much time is given to the consideration of matters pertaining thereto.

The association also has a Tariff Committee which has been successful in obtaining a better classification than formerly of the articles of jewelry enumerated in the Tariff Law. Such matters as excessive express rates, corporation tax law, domestic and foreign patent law requirements and factory inspection laws, are given careful consideration and valuable information concerning these matters is from time to time communicated to all its members.

The association held its annual banquet in Infantry Hall, Providence, on the evening of April 1. The speakers of the evening were the Hon. George W. Wickersham, Attorney-General of the United States, Prof. William R. Shepard, Columbia University, and J. Adam Bede, Ex-Congressman of Minnesota.



DEATHS

W. W. SLY



W. W. SLY.

William W. Sly, president of the W. W. Sly Manufacturing Company, Cleveland, Ohio, died that city, May 22, 1911, of pneumonia and complications. Mr. Sly was born in Oakland County, Michigan, in 1834, and after receiving his education he taught school for a number of years. Later he became interested in the foundry business and established the W. W. Sly Manufac-turing Company, in Cleveland, Ohio, in 1874, the firm being incorporated in 1903. In this business Mr. Sly formed a wide acquaintance among foundrymen. He was especially known for the part he took in the development of tumbling barrels, dust arresters, cinder mills and other modern cleaning room equipment. At the time of his death he was working toward the perfection of sand blast machinery. Mr. Sly was a member of the G. A. R. His son, Wilfred C. Sly, is secretary of the Sly company.

Edmond F. Pierdon, proprietor of the Star Electro-plating Works, 125 Fulton street, New York, died of heart disease, May 22, in the grandstand of the American League Baseball Park, just prior to the start of the game.

Mr. Pierdon, who was sixty-one years of age, was born in England and came to this country about fifty years ago. He, with three of his sons, established the present business in 1893. Mr. Pierdon was a member of all the Masonic bodies and has held several high offices in the order.

He is survived by his wife, four sons and a daughter.

The daily press reports that the frame of the Mayfly (Great Britain's new naval airship), is built of "Duralumin." This alloy was described in the October, 1910, number of The Metal Industry. Its composition is as follows: Aluminum 95, copper 4 parts, with varying amounts of iron, magnesium and silicon to make up 100 parts.



PROVIDENCE, R. I.

JUNE 5, 1911.

There has been a slight improvement generally among the metal working industries in this city and vicinity during the last month, with the result that the spring business, which a month ago looked very discouraging, will aggregate fully up to the average season. This is the case in practically all lines excepting the manufacture of jewelry and silversmithing. These lines have been far from satisfactory. Much had been expected, but the conditions in the West, where the talk concerning Canadian reciprocity and the fear of tariff tinkering have had material effect, business took a decided slump with the result that the season has proved very backward. It is estimated that the volume of business among the 225 manufacturing jewelry concerns of Providence is but slightly more than one-third what it was expected it would be. In consequence a large majority of the shops are running on scant time, and many will begin closing down to half time before long. Reports from the salesmen who are out on the road and from buyers who visit this city would seem to indicate, however, that the early fall business will be sufficient to counteract the unsatisfactory conditions of the earlier portion of the year and that the close of the holiday trade of 1911 will find the books showing a substantial balance on the right side. The condition of the jewelry business furnishes an excellent gauge of the general trade situation in this city from the fact that so many are engaged therein, or in the kindred and allied lines, many of which have direct connections with one or more of the other metal industries,

One of the most interesting scenes which the public is privileged to witness hereabouts in connection with its metal industries are the pouring of the huge bronze casting of statues and heroic figures at the bronze foundry of the Gorham Manufacturing Company, at its extensive plant at Elmwood. Every few weeks one these pourings occur, and at nearly every one large numbers of spectators are admitted to watch the work. A few days ago the statue of Col. Henry H. Young was cast from a model by Henri Schonhardt of this city. This statue, which was ordered by the General Assembly of Rhode Island last August, will be placed in City Hall Park this city in front of the Union Railroad Station in a few weeks. For about five weeks the skilled workmen of the Gorham plant have been putting the finishing touches to the mould for the statue, which is fourteen feet in height. The entire statue was cast in one mould.

Victor Smith, superintendent of the bronze foundry, took charge of the visitors, of whom there were nearly a hundred, and explained the casting operation before the workmen commenced actual work. To nearly all of the visitors the sight was unique. About 3.30 o'clock the great electric traveling crane pieked up the white hot "black lead" crucible filled with the molten bronze from the oil-fed furnaces, and the metal was turned into a large bucket. The crane then picked this up and placed it over the mould where workmen turned it into the reservoir.

Lindsay Baird took charge of the pouring of the metal, and when the reservoir was filled pulled the "plug" which sent the liquid metal into the mould. The molten bronze was heated to 2,800 degrees Fahrenheit. The pouring took about half a minute. The spectators were surprised when workmen, almost at once, commenced to take apart the heavy iron-bound sand mould. Experts, however, knew that the bronze had already solidified, and just one hour and ten minutes after it had been poured, the statue, sand-caked, was placed on view to those who remained. The sand mould, which had taken five weeks to construct, was demolished and cast aside as worthless. The outside sand was taken off, but the core was left in until the following day, when the workmen started the arduous task of taking out baked sand and iron sustaining rods through the feet of the statue. This is a long and tedious job.

After several months of discussion and consideration a plan to establish a co-operative industrial course in jewelry making and silversmithing in the public schools of this city was decided upon by the school committee a few nights ago, and the superintendent of schools was instructed to take such steps as will be necessary to work out the preliminary details, so that the students may undertake the start of the trial period about the first of July. The matter was brought before the school committee, chairman of the high school committee, the course proposed being a similar to that which was established in the Technical High School for machinists on lines similar to those of the Fitchburg plan, and which has been carried out with success during the year by thirty students. Mr. Frost for the high school committee presented a report and a resolution which was adopted as follows:

"Under authority granted by a resolution passed by the school committee in June, 1910, a co-operative industrial course for machinists was established in the Technical High School and has been pursued with conspicuous success during the year by about thirty students. By another resolution passed at the same meeting the committee on high schools was 'directed to consider the organization of similar courses in other industries and occupations, when in their judgment such action was deemed expedient.'

"In accordance with that resolution the high school committee and the superintendent of public schools have received and considered the application of the New England Manufacturing Jewelers' and Silversmiths' Association that a co-operative course be established for training students from the high schools in the jewelry industry. Since Providence is the most important centre of the jewelry-making industry upon this continent, it seems to your committee extremely fitting that the co-operative industrial course should be extended to that industry to the end that 'a higher type of industrial worker' be produced to take leading places in this important business in the future.

"Therefore, in order that the necessary preliminary details may be worked out, so that the students may undertake the trial period about the first of July, we recommend the passage of the following accompanying resolution:

"Resolved, That the Superintendent of Public Schools, with

the approval of the committee on high schools, be authorized to perfect working agreements between the manufacturing jewelers, the students from the high school and their parents or guardians of the city of Providence, for the establishment of a co-operative industrial course in jewelry making and silversmithing."

The George L. Brown Company has filed articles of incorporation with the office of the Secretary of State. It will engage in the business of manufacturing jewelry in this city with a capital stock of \$60,000. The incorporators were George L. Brown of Attleboro, Mass., Herbert J. Humphrey and Thomas F. Sexton of this city. The firm of West & Boutelle, doing a scrap metal business at 180 West Exchange street, has been dissolved by mutual consent, N. J. Boutelle retiring, while J. E. West will continue the business under his own name.

Articles of association have been filed at the office of the Secretary of State by John C. Bell of Attleboro; Louis Busiere, of Taunton, and Arthur E. Monroe, of this city, for the conducting of a general manufacture of jewelry under the name of the Jewelers' Finding Company, with a capital stock of \$10,000. The business will be located in this city and Attleboro.

A new machine for saw piercing has recently been installed in the factory of the Providence Metal Spinning Company for work on mesh bag frames and comb mountings. The concern is being kept very busy on metal spinning for silversmiths, novelty manufacturers and other lines of trade.

A charter has been granted to the Marks Jewelry Company of this city, with a capital stock of \$25,000. The incorporators are Isaac Marks, Bertha Marks, Jacob Dinberg and Michael Hogan, all of this city. The company is chartered to do all the business connected with a manufacturing jewelry corporation.

R. L. Griffith & Son Company is removing from 144 Pine street to the new Waite-Thresher building on Chestnut street this month. H. J. Astle Company has the contract for the installation of a Boland polishing system, coloring plant, sand blast and other apparatus as well as the introduction of shafting, motors, work benches and other appliances.—W. H. M.

NEW BRITAIN, CONN.

June 5, 1911.

Explosion and fire did damage to the extent of \$15,000 or \$20,000 at the plant of the Stanley Works May 9, when a lacquer condenser on the fifth floor blew up and started a fire in the factory. Only two men were injured, the only reason that no more were hurt being that the explosion occurred during the The explosion was the most terrific one which has noon hour. ever been known to occur in this city, the shock being felt a long distance away from the Stanley Works building. Three solid iron window castings were torn from the brick wall near the lacquer machine and hurled across the street for a distance of 200 feet. Practically every pane of glass on the fifth floor of the large factory was broken. Fire broke out immediately after the explosion in one of the large vats of lacquer, and when water was thrown on it, the lacquer splashed around the room and the flames spread in consequence. Chemical extinguishers did good work in putting out the fire. Finished goods on the lower floors were damaged with the water which soaked through the ceilings and ran all the way to the basement. Superintendent Bennett, of the Stanley Works, stated immediately after, the explosion was caused by the explosion of gases in the lacquer machine, the origin of the fire he was unable to account for. The damage has already been repaired.

The Peck, Stowe & Wilcox Company, of Southington, East Berlin, Conn., and Cleveland, Ohio, has awarded contracts for a new factory building in Southington, Conn., which, when completed, will cost fully \$300,000 and make the company's plant one of the best and most up-to-date in the country. Six new buildings are included in the contract, the structural steel work for which will be done by the American Bridge Company. The contracts call for a completion of the work before November 1, and as soon as this factory is completed the company's East Berlin, Conn., and Cleveland, Ohio, plants will be shut down and the entire business done in Southington. The additions will enlarge the floor space of the company's plant 130,000 square feet. Modern machinery will be installed throughout and all the machinery will be motor-driven and the plant lighted with electricity.

The New Britain Machine Company has purchased the George A. Prentice Company of New Haven, and as soon as a new factory building has been built to accommodate it the factory will be moved here. The Prentice company manufactures a turret lathe which is used to a large extent in local factories. The production of the "Marathon" motorcycle will begin soon after the concern gets the new plant started.

Deputy sheriffs from this city were called to Collinsville, Conn., during the early part of May to assist in the quelling of disturbances at the plant of the Collins Edge Tool Company where 300 employees were out on strike. The strike was called by union leaders to enforce a demand for an increase in pay for certain kinds of work. After a couple of exciting weeks during which the company did everything possible to protect the men who would work, the strikers returned to their duties, at their former pay.

The Stanley Works is the first local concern to fly an advertising banner from its factory flag-pole. That concern has purchased a pretty new pennant twenty by eight feet upon which are the words "Stanley Works" and every clear day it is flying at the top of the 100-foot staff. Business conditions in this city are very good. None of the factories are shut down and nearly all are working full time except Saturday afternoons. A. L. M.

ATTLEBORO, MASS.

June 5, 1911.

Business is reported as fair for this time of year among the jewelry manufacturers. There is a wide margin for improvement that could be made in the volume of orders, but in the totals the business compared favorably with the per cent. other lines enjoy amidst a general slowing down of prosperity. The 54-hour labor law, setting that limit on the weekly schedules of women and employed children, was signed by Governor Eugene N. Foss late in May. A few years ago 60 hours was the rule; then the law made it 58. This was changed again to 56 and after two years has just been made 54. The jewelers are hopeful that an amendment will be possible so that "goods made by seasons" will be given a little leeway. They are willing to guarantee that no woman worker will average more than 54 hours for a week based on a year's work, but feel that with the dull times coming regularly in the jewelry trade, they should be allowed to work 55 or even 56 hours a week during the rush seasons if the yearly average did not exceed 54.

The census bureau on May 10, 1911, issued a comparison of the 1904 and 1909 census figures for Attleboro, and the summary showed increases in every item. There were 128 establishments in 1909 as compared to 108 in 1904; an increase of 20 or 19 per cent. The value of products in 1909 was \$15,160,000 and \$10,050,000 in 1904, an increase of \$5,110-000. The average product per establishment was approximately \$118,000 in 1909 and about \$93,000 in 1904. The value of products represents their selling value or price at the plants as actually turned out by the factories during the census year, and does not necessarily have any relation to the amount of sales for the year. The values under this head include also the amount received for work done on materials furnished by others.

In 1908 there were only three cities and two manufacturing towns in the State which exceeded Attleboro in the average yearly earnings. The cities were: Beverly, \$640.17; Brockton, \$635.49, and Quincy, \$629.16. None of these totals approach the figures set by Attleboro in 1909. The average in the jewelry industry in Attleboro in 1909 was \$613.74, which indicates the relation that industry bears to wages in the town as a whole. Indications are that it will hold its place as having more wage-earners than any other town and than many cities in the State.

The Newark jewelry factories in 1910 turned out a product worth \$10,853,360, and if the later detailed report shows that Attleboro's jewelry maintains the ratio of being two-thirds of the product of that town, it will have passed Newark in the race for industrial supremacy in the trade.—C. W. D.

NEWARK, N. J.

June 5, 1911

Business with the manufacturing jewelry trade has been only fair; orders are not coming in as well as they should, but there is just enough business to keep the plants going on their quarter time. Most of the plants are now closing Saturday afternoon and some all day Saturday. Those selling to jobbers have been quite busy getting the fall stocks in shape, but those selling to the retail trade are taking it more easy and making the goods as the demand requires. There is no rush for goods and none expected, and no real change in conditions is now looked for till after the coming Presidential election. The brass industry is in fairly good condition and the various retail novelties made here are selling to the usual demand.

Wiegand & Company have increased their facilities and machinery for turning out jeweler's findings. This firm have succeeded to the business of Arthur Marson, Inc.

Van Schoonhoven and Park, of 30 Bucher street, have quit business, Howard B. Park goes to work for his father, Charles W. Park, formerly of the Eastwood-Park Company, who started in business at 91 Oliver street, making sterling silver novelties. He has put in a full line of machinery and has bench room for thirty hands. David J. Crimmins, who was with John Jennings, has bought out the business and is making silver, German silver and metal backs for toilet articles and novelties. Hanson and Van Winkle have recently built two small additions to their group of buildings and are preparing to erect another three-story building as an addition to the factory. M. Alexander, of the Richardson build-

ing is now making platinum jewelry in addition to his line of gold rings. J. W. Rosenbaum and Company have enlarged their lines considerably. They used to make German silver and metal novelties and have engaged Louis R. Rosenberg, late with McRae and Keeler, of Attleboro, Mass., to take charge of the new lines of 10-karat gold jewelry and mesh bags. It is understood that the Rosenband Manufacturing Company, who have made silver and German silver lines, will undertake the manufacture of other lines.

B. A. Keller, who was formerly of the old optical manufacturing firm, Meigs and Keller, has taken the position of foreman of the grinding department of W. A. Wirth and Company, manufacturing and wholesale opticians. The American Platinum Company are in their new building at 255 Railroad avenue and are in a position to do a much larger business. More machinery and new lines have been added. Special attention is now being paid to refining gold and silver. A complete line of platinum dishes and other articles are carried in stock. A new laboratory has been fitted up and seamless tubing for the jewelry trade is being turned out in large quantities.

The K. Bracher, Jr., Manufacturing Company have now moved into a large factory building at Holmes and Main streets, Belleville, near here. They have increased their capital, have taken up new lines, are much better equipped with machinery and have rail and water connections

Klatzko and Barisov, of Springfield avenue, have put in a small manufacturing jewelry plant and have done considerable work for Catholic churches.

The Newark Brush Company, since they got in their own building on Mulberry street, have been quite busy on jewelers', silversmiths' and brushes for the metal trade. They also job their lines and do a general supply business. The firm are also making a new line of sheepskin and walrus hide leather buffs and felt wheels.

Hofman and Ulrich is a new firm making dies and doing modeling and designing for the trade at 28 Beecher street.

J. Wiss and Sons, who have a large cutlery factory and retail jewelry store, were incorporated not long ago for

\$40,000, and are in their new business block on Broad street. Statman and Knipper is a new firm making jewelry at 93 Lafayette street. They will make a specialty of emblems and badges, also 10 and 14 karat gold lines. Since starting, however, David Statman has bought his partner out and is running the business alone. J. Ruthstein and Theodore Osterweil have started in business, jewelry repairing, engraving and chasing, at 10 West street.

The Loures Optical Company have moved from Mulberry and Chestnut streets to the Levy and Koch building, 126 South street. New machinery has been added and they are making gold and gold-filled optical goods and a new line of spectacle frames and mountings. The New Jersey Smelting and Refining Company, Clarence Curran, manager, have added eight new burning furnaces to their equipment and a 60-foot stack and have also gone into the copper and lead lines. William A. Liddell established the Finished Parts Manufacturing Company, Orchard and West Kinney streets, using the Sampson metal process, compound of zinc, tin, antimony, etc., for making dies under high pressure.

H. S.

BRIDGEPORT, CONN.

JUNE 5, 1911.

The incorporation quite recently of the Bridgeport Screw Company, with a capital of \$350,000, which may shortly be increased to \$500,000, is of particular interest in the person of its official head, William J. Farrell, for some time Canadian representative of the United States Steel Corporation, with head-quarters in Toronto, and a brother of the new President of the Steel Corporation, James A. Farrell. The new company will employ 1,000 operatives at the full capacity of their plant as now laid out.

Still another concern will have moved to Bridgeport before the season is over. The Artistic Bronze Company of South Norwalk, searching for more room in which they may carry out their plans to greatly increase their output of builders' hard-

ware and furniture trimmings, have finally determined to move their works to this city. The Bridgeport Hardware Manufacturing Corporation announce that pressure of increasing business will compel an immediate addition to their plant.

The aviation meet referred to in your correspondent's previous bulletin, developed an industrial significance which had not been anticipated at that time. At this writing, it is now pretty defintely agreed that the Herring-Curtiss Company will move their aeroplane plant from Hammondsport, New York, to this city, and that they will be but one of several flying machine factories who will be quick to take advantage of the fine practice field at the "Aerodrome," and the supply of highly skilled mechanics in this vicinity.

It is with the keenest satisfaction, the announcement of the government investigation into the business, rates and service of the express companies, by the Interstate Commerce Commission, is received here. Every manufacturer is deeply interested, and particularly those fabricating in precious and semi-precious metals. At the behest of a group of these in the Manufacturers' Association, the latter has been carrying on an independent investigation covering a period of the past eighteen months. Most conclusive evidence has been obtained of a loose system of rating in general, and discrimination against Bridgeport, in The association, in addition to being supporters and particular. co-petitioners with the New York Merchants' Association and 150 other commercial bodies, in the prayer for a general investigation of the express companies on the initiative of the Commerce Commission, were on the point of instituting independent suit for relief at Bridgeport, before the Interstate Commerce Commission, when the latter's announcement of the special investigation of the entire question was received. It will consume at least a year of the commission's time in the opinion of prominent attorneys, and great confidence is felt on the part of the shippers, that the express business will be sifted to the bottom, and possibly, "then some." M. E. B-G.

ROME, N. Y.

June 5, 1911

The Rome Brass and Copper Company is erecting an office building on East Dominick street. The structure is to be 3 stories in height and will afford much needed relief to the overcrowded general offices of the company.

The large new mill being built for the Rome Tube Company at East Rome is well under way. When finished the entire plant of the Tube Company will be removed from its present location at the edge of the Eric Canal and installed in the new buildings. The necessity for this change has been felt for a long time, it is said, and as better pumping facilities, new boilers, muffle pits and other improvements are now needed, the present was considered a good time to establish the plant in a new location.

Considerable trouble has been experienced at the present plant in getting proper sewerage, as the ground lies low and the state authorities objected to having the canal polluted by the discharge of sewerage into it. The new plant is so located that excellent drainage facilities are secured. It is expected that once well-settled in the new plant, the Rome Tube Company will be in splendid shape to handle a larger volume of business than ever.

The mills and factories of Rome are beginning to feel the dullness that pervades the rest of the country. The Rome Brass and Copper Company are reported to be working on short time and several other plants expect to do likewise unless new business comes forward in greater volume. The James A. Spargo Wire Company are running night and day, as usual, but report a falling off in business during the last few weeks. The Spargo Wire Cloth Company reports doing a remarkably large business this season in brass and bronze wire screen cloth. Orders for large quantities were refused on account of the mill being so overcrowded that prompt deliveries could not be made. G. W. C.

BUFFALO, N. Y.

June 5, 1911.

Manufacturers allied with all metal trades have keenly felt the general dullness in business conditions which have prevailed in Buffalo during the spring. No special reasons are given for this, but it is hoped that the summer will bring increased activity in all lines. Manufacturing jewelers report a fair spring business. While the demand for the 14-karat and better lines have been fair, the 10-karat goods have had a more active campaign. The ring manufacturers have all found their orders just above normal. Manufacturers of silver and metal novelties, tool, machinery and die makers report business normal.

The Republic Sign and Advertising Company has just been organized, and have rented quarters in the Caxton building and will later erect a plant. Advertising novelties will be the chief article of manufacture with electric signs and devices. The firm is organized with a paid-in capital of \$25,000 and the directors of the company are James A. Kenney, Howard F. Bink, Emil A. Becker, Max Becker and John W. Van Allen.

Niagara Falls metal industries have had a good year. With the approach of summer the heavier orders are dropping off, although business is sufficient to carry the entire force of employees. There has been an increase in the building of factories for the manufacture of tools and machinery. With the opening of the tourist trade there will be among the retailers a big demand for jewelry novelties and the cheaper jewelry articles.

The convention of the New York State Jewelers' Association which came to Buffalo May 23 to 25 was an event of interest and importance to both retail and manufacturing jewelers. Heintz Bros. entertained the 300 delegates and local jewelers at their factory on one afternoon of the convention, and besides giving a tour of inspection over their factory presented each visitor with a souvenir watch fob specially designed and manufactured for this occasion. The convention was held at the Hotel Statler. The most important business transacted was the unanimous vote to affiliate with the National Retail Jewelers' Association. A handsome Knights Templar diamond charm was presented to the retiring president, Charles J. Evans, which was made by the Tanke Company of Buffalo.

F. Fries & Company report a normal trade for the spring. It is believed that the coming year will find a big increase in the metal business. The Fries Company are adding new workmen, and their business is steadily on the increase.

The Iroquois Hotel is just starting on its proposed \$75,000 improvements in the main body of the hotel. Fifty or more new bedrooms with private baths will be installed. When the new General Electric office building is erected, a big contract for plumbing and lighting fixtures will be let. The Westinghouse Electric & Manufacturing Company, which has offices in Ellicott Square, is making an active publicity campaign on the application of electric motors to clay working machinery.

The Schopp Manufacturing Company have moved into the building opposite the post office and will continue the manufacture of rings. Mr. Schopp has closed out his retail department in Ellicott Square and will devote his entire time to the wholesale and manufacturing lines. Buffalo is now included in the territory which is covered by the Western agents of Rockhill & Vietor, 114 John street, New York, and the Bennett-O'Connell Company, Chicago, Ill., and this firm will handle for Buffalo and surrounding territory the Nonesuch plating machine.

Among the recent additions to the membership roll of the Chamber of Commerce and the Manufacturers' Club are Black Rock Brass & Bronze Company, the Buffalo Copper & Brass Rolling Mill Company, the Buffalo Expanded Metal Company, the Buffalo Machine Manufacturing Company, the Flexlume Sign Company, the Elsenshans Machine Company, the Frontier Water & Steam Supply Company, and the Lumen Bearing Company.—McG.

DETROIT, MICH.

June 5, 1911.

Outside the automobile industry there has been no unusual run of business in the general brass industry during the last month. All the factories, however, are running about the same as for some time. Manufacturers of plumbers' and other supplies are well supplied with orders and have nothing about which to complain. The outlook seems to be about as favorable as conditions are at present. The automobile business, however, is continuing at a tremendous boom. It was thought when the season opened that many plants here would shut down early in the fall, or, perhaps, before the

summer was over. It is now positive that the rush of business will continue right up to fall. Such a run means, of course, the use of a great amount of brass supplies, and every factory in the city that is engaged in this line is having all it can do.

The great Ford automobile plant is now employing over 5,000 men, and is producing a large number of cars daily. These are shipped all over the world. They are now being used in some of the most remote quarters of the globe. Harry M. Jewett, president of the Paige-Detroit Motor Company here in discussing the automobile business says: "While many manufacturers have predicted an over-production of cars this year, I believe that this will not be the case. Last fall when many of the makers cut their output, we laid our plans for increased business. As you know, our company is only two years old and some makers thought that we were too optimistic. Succeeding events, however, have shown that the confidence we had was well founded.

"We have increased our floor space 100,000 square feet and have more than doubled our working force, and are working three nights a week, and yet we are unable to keep up with our orders. We have secured very satisfactory connections in England, Germany, Australia and New Zealand and also Russia and Denmark.

President Benjamin Briscoe, of the United States Motor Company, has found that in the course of a year the railroad companies of the United States receive directly from the automobile makers, and indirectly from the producers of raw materials, such as brass and steel, about 12 per cent. of the selling price of all machines, or between \$25,000,000 and \$30,000,000.

Among the Detroit industries that have shown a marked growth in the last few months is the Abbott Motor Company in this city. Since this company was reorganized in September, 1910, the plant has been increased one-third and the number of cars to be manufactured increased from 1,000 in 1910 to 2,500 the present year. This of course means a much greater use of brass parts, and adds to the general demands on the brass auto-part manufacturers of the city. The officers of this company are: President, C. W. Jamieson; vice-president, F. M. Knapp; second vice-president, H. M. Preston; secretary, Wade Mills; treasurer and general manager, M. J. Hammers; assistant general manager, B. C. Spitzley. The first three-named officials reside in Warren, Pa.

The Burrows Adding Machine Company has recently completed removing to their plant in this city all the machinery and also the employes of the former Pike Adding Machine Company, of Orange, N. J. The Burroughs people are now manufacturing every known device of calculating machinery, 114 types in all. One of the latest is a non-listing device, the demand for which comes from large retail and department stores and other business organizations where final totals are desirable on short notice. This company also has devised a machine, approved by the executive council of the American Bankers' Association, which will be placed in banks all over the United States. It is a device for recording transit items and writing the letters in transit and will not only save a great deal of time and labor, but also will save many of the inaccuracies that now creep into letters in transit.

The various Hupp activities in Detroit have been merged into one concern known as the Hupp corporation. The companies that comprise the merged organization are the Hupp-Yeates Electric Car Company, Hupp-Turner Machine Company, Hupp-James-Geyman Foundry Company, Hupp-Johnson Forge Company and the R. C. Hupp Sales Company. The plants of the first four concerns occupy nearly sixty acres in the Fairview district. In the new organization each company will maintain its separate corporate existence, but the selling, purchasing, accounting and financing of all of the enterprises will be handled through the Hupp corporation. The officers are: President, R. C. Hupp; vice-president, C. D. Hastings; secretary and treasurer, L. G. Hupp. The Hudson Motor Car Company has been shipping daily, with the exception of Saturday, fourteen furniture cars of machines are shipped. Each week's shipments from this plant represents nearly a quarter of a million dollars.—F. J. H.



TRADE NEWS

TRADE NEWS OF INTEREST DESIRED FROM ALL OF OUR READERS. ADDRESS
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ADDITIONAL TRADE NEWS WILL BE FOUND UNDER "CORRESPONDENCE."



The Galt Brass Company, Galt, Ontario, are enlarging their plant, and will put in some new machinery.

A. T. Nye, Son & Company, manufacturers of stoves, Marietta, Ohio, have recently installed two Adams molding machines.

The Keeler Brass Company, Grand Rapids, Michigan, has been changed from a partnership to stock company, with a capital of \$250,000.

The current trade press reports that the Canada Refining & Smelting Company, whose output is silver and arsenic, Orillia, Ont., is enlarging its plant to an extent which will double the capacity.

The United States Gas Furnace Company, Providence, R. I., has repurchased the jewelers' gas furnace business, which they sold to the Simplex Tool & Supply Company, of Boston, Mass., last summer.

The Belmont Stamping & Enameling Company, of New Philadelphia, Ohio, are going to enlarge their plant by the erection of a brick and steel building which will be used for machinery and stock in connection with their business.

The Buffalo Wire Works Company, Buffalo, N. Y., is building a four-story and basement fireproof factory and office at 320 and 322 The Terrace, adjoining its present plant. Considerable additional wire-weaving equipment will be provided.

At a recent meeting of the stockholders of the More-Jones Brass Metal Company, St. Louis, Mo., Edward A. More was re-elected president and treasurer, and John B. Strauch, vice-president and secretary. The officers with M. C. More were re-elected directors.

The Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa., have recently put in a complete die-casting plant for the making of some of their white metal castings. The Doehler Die-Casting Company, of Brooklyn, N. Y., made the installation.

The Balbach Smelting & Refining Company, Newark, N. J., are now ready to award contracts for the erection of a \$25,000 office building at 578-580 Market street. The building will be a fireproof structure 50 feet square and three stories high and will provide a laboratory.

The Southwark Plating Company, platers, polishers and grinders, Philadelphia, Pa., report, through William Steinmetz, that the new three-story brick building, 16 by 40 feet, that will be erected for them, will not be an addition to their Fifteenth street plant, but will be built at 1613 Carpenter street.

The Baird Machine Company, Oakville, Conn., report that they have completed the plans for their new plant, to be erected at Bridgeport, Conn., and will immediately let the contracts. The works will consist of a machine shop, power house pattern shop, store house and a two-story office building.

The Celluloid Zapon Company, manufacturers of varnishes and lacquers, New York, are distributing a little souvenir in the form of an ash tray, which illustrates the results which this company obtains on metal by means of their coloring enamels. The finish on the ash tray shows that the modern method of applying enamels has been brought to a high state of perfection.

At the annual meeting of the Monell Metal Manufacturing Company, New York, W. A. Bostwick was elected president to succeed Ambrose Monell; John A. Ashley, treasurer was elected secretary and treasurer, and F. S. Jordon, assistant secretary and treasurer. Mr. Bostwick was elected a director to succeed E. C. Converse. The other officers and directors were re-elected.

Shimer, McGlynn & Company, Inc., Philadelphia, Pa., the formation of which company was announced in the May issue of The Metal Industry, now announce the opening of their new mill for the production of phosphor bronze, German silver and high grade nickel alloys in sheets, rods, wire and special shapes, and only the highest grade material will be produced.

A business man in a European country, who states that he is in a position to furnish first-class references, informs an American consulate that he desires to receive offers from American producers of zinc in ingots and sheets. Correspondence may be in English. In applying for address, at the Bureau of Manufactures, Washington, D. C., refer to file No. 6733.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 o'clock A. M., June 23, and publicly opened immediately thereafter, for furnishing the following supplies: At the navy yard, Brooklyn, N. Y., Sch. 3566, sheet brass. At the navy yard, Philadelphia, Pa., Sch. 3566, brass nuts. At the navy yard, Norfolk, Va., Sch. 3564, metallic zinc, white zinc.

The Grasselli Chemical Company, of Cleveland, Ohio, has acquired a site in Canton, Ohio. The construction of the new plant will begin immediately and during the construction period a large force of men will be employed, it being expected that the work will be completed about January 1. The company produces a full line of heavy chemicals, salts, etc., and in order to better serve its trade in the Canton district, was influenced in locating a plant at that point.

The Benedict Manufacturing Company, manufacturers of silver plated ware and metal goods, E. Syracuse, N. Y., announce that they have gone into the manufacture of a new and unique line of electric portables. The shades of these portables have pieces of ornamental cretonne or chintz between the layers of glass, which produces a rich effect. This line met with immediate success and the company is facing the necessity of erecting an addition to their arts craft department.

The Keystone Bronze Company, Pittsburg, Pa., are making alterations, improvements and additions to the plants of the Brighton Brass & Bronze Company at New Brighton, Pa., and the bronze and copper department of the Best Manufacturing Company, Pittsburg, Pa. The taking over of these two companies by the Keystone Bronze Company was reported in The Metal Industry, April issue. The Brighton Works will have an extension to the foundry building, and a new building will be erected for the installation of four steel furnaces.

The Tabor Manufacturing Company, manufacturers of foundry molding machines, Philadelphia, Pa., are preparing to transfer from a New Jersey charter to a Pennsylvania charter in order to conclude the plans for the erection of their new plant. They have arranged for the purchase of a five-acre tract near the above mentioned city but have not decided just when they will start to build. A charter with a capital stock of \$150,000 will be taken out and the capital stock increased as required for the erection and equipment of the new plant.

Los Angeles Brass Manufacturing Company, manufacturers of chandelier fittings and general brass goods, Los Angeles, Cal., announce the consolidation of the Los Angeles Brass Works and the Liebfried Brass Manufacturing Company into one corporation, to be known as above. The most modern and up-to-date machinery has been installed, and the corporation now has the complete plant of its kind on the Pacific coast, and is in the best possible position to execute promptly all orders. The officers of this company are E. F. Rice, president; L. R. Raymond, vice-president; L. W. Swarts, treasurer, and D. T. Mason, secretary.

The Abrasive Material Company, manufacturers of "Abrasive" grinding wheels, Seventy-second and Upland streets, Philadelphia, Pa., have acquired property at James and Fraley streets, Bridesburg, Philadelphia, on which they will erect a new plant, including a main building 124 by 348 feet, with a wing 68 by 124 feet; and an office building 36 by 43 feet. The new plant will have a capacity nearly double that of the present one, which has been purchased by the city, as it is on the line of a proposed boulevard. The company, by J. H. Byers, superintendent, report that at the present time they are not in a position to give details regarding power equipment and machinery.

The International Nickel Company, New York, earned a surplus over all expenses and fixed charges of \$3,775,600 in the year which ended March 31. After paying 6 per cent. on the preferred stock, the balance remaining was equivalent to 28 per cent. on the common stock. Last year the company earned 17 per cent. on its common stock. Included in the deductions from net earnings before surplus was declared was \$1,253,273 charged off for depreciation, mineral exhaustion, sinking fund appropriations and bond interest. After paying 7 per cent. on the common stock the company had a balance of \$2,432,073 to carry forward to profit and loss surplus.

The Chapman Valve Mfg. Company, manufacturers of valves, etc., Springfield, Mass., has carried through its plan of financial reorganization. A new corporation has been organized under the same name, with the exception that a "the" has been introduced before the corporation title. The nominal capital stock is reduced from \$1,300,000 to \$1,000,000, but the actual cash capital is \$200,000 greater. Of the shares \$500,000 are 7 per cent. cumulative preferred and an equal amount of common stock. The incorporators are members of the old board, namely, Adolph W. Gilbert, Edwin A. Carter, George B. Holbrook, Dwight O. Gilmore and William C. Godfrey.

It is reported that a new company, to be known as the Art Brass and Fixture Manufacturing Company, with a capital of \$100,000 has been organized with Pittsburg capital to take over the plant of the Star Enamel Company, McKees Rocks, Pa., in which a foundry and brass working plant will be installed. A charter has been applied for and the work of installing machinery and altering the plant has begun. It is expected to have the plant ready for operation by the first of July, and 100 skilled brass workers will be employed. It is intended later to employ 400 hands. The plant will be under the management of L. M. Fluhart of Conneaut, Ohio, who is president of the company.

The Finkell-Hachmeister Chemical Company, Pittsburg, Pa., importers, manufacturers and dealers of chemicals, report progress in the work of putting up their new building, which is located on Forbes avenue, near the Brady street bridge. They have torn down eight old buildings, three more are to be razed, and when all is done they will erect a five-story, 97 x 150 ft. brick and cement structure, which may be finished in 1911 or 1912. The Baltimore and Ohio Railroad will run right into the building and it is also a handy location for trucking about Pittsburg. When finished the company expects to be in better shape than ever before to supply all kinds of chemicals for the metal working and plating trades.

In our May issue we announced the purchase of the assets of the Levett Manufacturing Company, Matawan, N. J., manufacturers of platers' and polishers' supplies, by the Loeb Electro-Chemical Company. A complete reorganization of the business

has since been effected under the title, Munning-Loeb & Company, the principal interested parties being Mr. Munning, formerly of the Cutler Hammer Manufacturing Company, Milwaukee, Wis., and Walter Loeb, formerly of the Zucker & Levett & Loeb Company, New York. The new company has already begun manufacturing operations and extensive plans, which will be announced later, are being perfected for building up a larger and more substantial business than ever in the manufacture of platers' and polishers' supplies and equipment.

COPPER OFFICES AND WAREHOUSES

C. H. Hussey & Co., of Pittsburg, Pa., manufacturers of copper in sheets, plates, rolls, anodes, tacks and nails, announce that they have opened a series of branches in different parts of the United States, by which they will have offices and warerooms in all parts of the country and can make more prompt deliveries and give quicker attention to their customers. Their New York office is located at 345 Fifth avenue. Their stock is at the Tooker Warehouse, which branch is in charge of W. C. Dickey and will supply the eastern trade. In San Francisco they have opened a warehouse on Folsom street, in charge of A. H. Burns. In Cincinnati their office is at the First National Bank, D. F. Buchanan in charge. In Chicago, the North Western Railroad building, agent, R. H. Hannisch. A full line of wrought copper, all sizes and gauges, can be obtained from the above offices.

DIVINE BROTHERS' ENLARGEMENTS

Divine Brothers Company, 43 Whitesboro street, Utica, N. Y., heretofore the largest concern engaged exclusively in the manufacture of polishing and buffing wheels, are still further increasing their capacity by erecting a new mill, 46 x 115 feet, threestories and basement, on land adjoining the present plant. The business of the company has grown very rapidly since the factory was moved from New Hartford, N. Y., to Utica five years ago, so rapidly in fact, that several additions to their factory have been made from time to time. In 1910 they bought the land occupied by the plant, and contracts have been let and excavations are now being made for the new mill mentioned above.

The Divine Brothers Company has at present 120 employees and this number will be increased to about 200 as soon as the new mill is ready for occupancy which it is expected will be about July 1. The new plant will not do away with the use of the old structures which will continue to be operated.

The important announcement is made that the capitalization of the company has been increased from \$50,000 to \$100,000 and an issue of bonds to the amount of \$60,000 has been negotiated. The officers of the concern are Bradford H. Divine, president, and O. J. McKeown, secretary and treasurer and therewith Dr. E. D. Fuller constitute the directors.

EUREKA PRODUCTS

The Eureka Pneumatic Spray Company, of 276 Spring street, New York, announce that they are cutting price on colored pigment lacquer, or, more preperly speaking, lacquer This concern claims that their new lacquer enamels are far superior to any that have ever been made, and a very important point is that they do not have the objectionable odor of other makes, but have a pleasant smell which operators do not object to. They also claim that their enamels are tougher and more durable and will polish higher than other makes. The Eureka people make a specialty of packing these goods in tin cans only, so that users get the benefit of a convenient package which operators can properly shake, thus insuring the material to be properly mixed at all times as well as avoiding loss by spilling. Another very strong claim which this concern makes is that they will very shortly be able to offer lacquer enamels which will greatly reduce insurance risks owing to the fact that they are practically non-inflamable, it being possible to take a lighted match and hold it on the lacquer without setting fire to same, or by sticking the match in the lacquer enamel, which will extinguish the flame. The great value of lacquer and lacquer enamel so made will be appreciated by consumers.

Eureka Company turn this lacquer enamel out in high lustre black, rubber finish black, dead black, transparent, white and all colors, and at all times are willing to give customers instructions in the use of same.

BENEDICT OUTING

The salesmen of the Benedict Manufacturing Company held their annual spring convention at the company's plant at East Syracuse, N. Y., during the week of May 8. One of the main purposes of the gathering was to prepare for the coming holiday business on the new line of electric portable lamps recently placed on the market by The Benedict Manufacturing Company. These lamps are in brass with unique and original art shades which have been patented. So well have these already taken with the buying public that the company is preparing to erect an addition to their factory, which will be devoted exclusively to the manufacture of these lamps. This will materially increase the floor space of the plant as well as necessitate more employees. Steps also are being taken to protect the valuable patent on these lamps and shades.

In addition to many interesting and instructive conferences at the offices of The Benedict Manufacturing Company during the week an outing was held at South Bay on Oneida Lake, which was attended by the members of the selling force and H. L. Benedict, president; R. B. Roantree, treasurer; C. C. Graham, sales manager, and A. F. Saunders, designer. The trip to the lake was made in automobiles which left the factory at noon, and the afternoon was spent in fishing. The travelling men in town were: C. C. Graham, New York City; John Bailey, Pittsburg, Pa.; F. A. Weatherley, Chicago, Ill.; J. P. Kane, Syracuse, N. Y.; H. H. Jackson, Syracuse, N. Y.; Edward Dorner, New York City; W. A. Van Patten, Columbus, Ohio; Newton Owen, St. Louis, Mo.; J. P. Deal, Atlanta, Ga.; I. G. Proctor, Toronto, Ont.; E. E. Fuller, New Orleans, La.; F. O. Vermilyea, Milwaukee, Wis.; J. H. R. Proctor, Toronto, Ont.; A. C. Barrie, San Francisco, Cal.; O. D. Irwin, Boston, Mass.; L. K. Phreaner, Los Angeles, Cal., and R. N. Pembroke, Portland, Ore.

FIRE

A fire, which started in a stable at Liberty avenue and Thirty-first street, Pittsburg, Pa., May 13, was communicated to the plants of the Lawrenceville Bronze Company and the Pittsburg Foundry and Supply Company, causing a loss of approximately \$3,000 to each company.

CHANGE OF FIRM

The business of August Buermann, Newark, N. J., which was established in 1842, has been incorporated under the name of the August Buermann Manufacturing Company, the incorporators being August Buermann, August Buermann, Jr., Henry Buermann and George Buermann. The company will continue the manufacturing of brass, bronze and aluminum castings and hardware specialties under the Star trade mark. The management will remain unchanged, but it is intended to enlarge the plant extensively, owing to the rapid increase of business.

REMOVALS

The McNab & Harlan Manufacturing Company, manufacturers of plumbers' brass goods, Paterson, N. J., have moved their New York office from 56 John street to the ninth floor of the new Hilliard building, 57 John street.

INCREASE OF CAPITAL STOCK

The Acorn Brass Manufacturing Company, Chicago, Ill., have increased their capital stock from \$200,000 to \$300,000.

The stockholders of the Bridgeport Metal Company, manufacturers of brass goods, Bridgeport, Conn., have authorized an increase of capital stock from \$50,000 to \$200,000. The number

of bonds, at the par value of \$100, was also increased from 500 to 2,000. The directors of the company are Anker S. Lyhme, Frank W. Harmon and Herman K. Beach.

DECREASE OF CAPITAL STOCK

The General Foundry Company of Alliance, Ohio, has decreased its capital stock from \$100,000 to \$50,000.

INCORPORATIONS

Business organizations incorporated recently. In addressing them it is advisable to include also the names of the incorporators and their residence. Particulars of additional incorporations may frequently be found in the "Correspondence" columns.

PARKHURST DIE CASTING MACHINE COMPANY, Anderson, Indiana. Capital stock, \$100,000. Directors: L. M. Parkhurst, W. T. Durbin and W. N. Durbin, all of Anderson.

Ohio Metals Treatment Company, Cincinnati, Ohio. Capital stock \$200,000. Incorporators: W. T. Judkins, E. J. Babbitt, Thomas Baen and R. M. Fishbach, all of Cincinnati

ATLANTIC ZINC & LEAD COMPANY, Kittery, Me. Capital stock, \$300,000. To carry on a general manufacturing business. Officers: Horace Mitchell, Kittery, Me., president; C. E. Smothers, Portsmouth, N. H., treasurer.

Jewelers' Finding Company, Attleboro, Mass. Capital stock \$10,000. For the general manufacturing of jewelry. Incorporators: John J. Bell, Attleboro; Louis Busiere, Taunton, Mass.; Arthur E. Maure, Providence, R. I.

Franklin Smelting and Refining Company, Philadelphia, Pa. Capital, \$200,000. To smelt and refine gold, silver and platinum. Incorporators: Carlos Mestres, William R. Reinick, Samuel C. Fenner, all of Philadelphia.

Whipple & Campbell Company, Providence, R. I. Capital stock, \$25,000. To buy, sell and refine gold, silver and other metals. Incorporators: Charles H. Whipple, Bradford Campbell and Henry M. Boss., Jr., all of Providence.

BAY STATE BRASS COMPANY, New York. Capital stock, \$75,000. To manufacture and deal in brass and other metals. Incorporators: H. J. B. Willis, Tenafly, N. J.; S. S. Cassard, Haydenville, Mass.; and H. L. Arnold, New York.

Lewis Electric Welding and Manufacturing Company, Toledo, Ohio. To manufacture mechanical and electrical appliances. Incorporators: G. L. Lewis, Frank W. Otis, Ewald Preus, H. W. Fraser, E. J. Marshall, all of Toledo.

Kelly Foundry Company, Elkhart, Ind. Capital stock, \$10,000. To engage in general foundry and machine business. Directors: A. Sork, Jr., Edward Kelly, John Kelly, all of Elkhart. The company is contemplating the addition of a brass foundry.

PRINTED MATTER

Wheels: The Divine Brothers Company, manufacturers of polishing wheels, etc., Utica, N. Y., have lately put upon the market a cushion truck wheel, which is composed of iron sideplates, channelled to receive an indestructible fabric cushion tire, which it is claimed does not deteriorate with use and will wear for years. This new truck wheel, which is made on the same principle as linen polishing wheels, has been very successful and it is claimed by the manufacturers will revolutionize the manufacture of truck wheels. This wheel is fully described in a booklet which may be had upon application.

DIE CASTINGS: The Precision Die Casting Company, Syracuse, N. Y., have issued a catalog giving cuts and descriptions of their Precision die cast machine parts and engine bearings. It is said by the makers that Precision die cast bearings cost less than

machine bearings and at the same time give better service and wear longer. These castings are made from Precision babbitt which is claimed to be thoroughly dependable where strong, close grained, hard surfaced bearings are required to resist sharp impact. They are absolutely accurate as all holes, lugs and oil grooves are finished in the operation of casting. Catalogs upon request.

PHOSPHOR COPPER.—A very attractive booklet entitled "Damascus Phosphorized Copper" is issued by the Damascus Bronze Company, of Pittsburg, Pa. The cover of the booklet contains a view of Damascus printed in colors and the inside pages are illustrated with pictures of locomotives, automobiles, trolley cars, motor engines, steel freight cars, printed in a bronze tint. The reading matter contains a description of why, where, when and how to use phosphor copper and states that the Damascus Broze Company are the originators and first manufacturers of phosphor copper. Booklet "D P C" is sent upon request.

CLEANERS: The Hanson & Van Winkle Company, manufacturers of platers supplies, Newark, N. J., have issued a folder describing the exceptional qualities of "Kostico" for cleansing purposes. Kostico is recommended for bolts, nuts and screws, as it saponifies the oil and grease used in the manufacture of these goods and removes it without discoloring or oxidizing the most highly finished work. It is also claimed that it does not affect soldered joints. Kostico being a dry granular salt it can be handled without waste and makes a clear solution with no surface scum.

CATALOGUE EXHIBIT

An exhibition of every kind of catalogues may be seen at The Metal Industry office, 99 John street, New York. The Metal Industry is prepared to do all of the work necessary for the making of catalogues, pamphlets, circulars and other printed matter. Estimates will be furnished for writing descriptions, making engravings, printing, binding, for the entire job from beginning to end or any part of it.

AD NEWS

The Paige Retort & Crucible Company, Taunton, Mass., make a specialty of crucibles for brass mills and high conductivity retorts. Their advertisement this month points out some of the good qualities of their goods.

Chas. F. L'Hommedieu & Sons Company, manufacturers and dealers in platers' and polishers' supplies, 24 to 30 South Clinton street, Chicago, Ill., this month illustrate their "No. 9" polishing lathe, and "No. 8" plating dynamo.

The Hill & Griffith Company, foundry supplies, Cincinnati, Ohio, offer to send free trial samples of their "Faultless" parting compound to foundrymen who write for catalog No. 6-M to either their Cincinnati or Birmingham, Ala., offices.

The Foreign & Domestic Metals Company, 578 Rockefeller Building, Cleveland, Ohio, carry in stock a complete line of new metals for immediate delivery, which includes pig tin, antimony, ingot copper, pig lead, spelter, etc. Their card appears on another

R. D. Wood & Company, 400 Chestnut street, Philadelphia, Pa., advertise in this issue their hydraulic wire draw benches. This firm also manufactures hydraulic presses, etc., and other classes of machinery for use in rolling mills, machine shops, foundries, etc.

The Peckham Manufacturing Company, 234 South street, Newark, N. J., issue a circular "Leather Meal" and offer to send samples of their selected leather meal for dry barrel tumbling. This concern has long been the leading suppliers of this material to the plating trade.

Hugh McPhee, 179 Main street, Tarrytown, N. Y., publishes in this issue some illustrations of the "McPhee" process for putting patterns on plates as applied to stove plate work. Mr. McPhee

also makes all kinds of aluminum match plates for brass, gray and malleable iron and steel.

The Basic Mineral Company, Cassius M. Miller, proprietor, N. S., Pittsburg, Pa., call attention to "Radioclarite," a bronze alloy flux for which they claim remarkable properties and which they state is used exclusively by some of the largest foundries in the country. A trial package will be sent free to interested foundrymen who apply for it.

The Uraniumite Company of America, Buffalo, N. Y., are advertising Uraniumite as the only assimilator and scavenger of all metals. The company advise us that this flux is used very successfully by a number of the largest and most successful foundries in the country. It is compounded for iron, steel, brass, bronze, aluminum, gun metal and crucible steel.

The advertisement of Fitz, Dana & Company, importers and dealers in metals, 110 North street, Boston, Mass., on the front cover, itemizes their specialties, which include practically all kinds of metals which the foundrymen can possibly require, also solder, etc. The New York house of Fitz, Dana & Company, 441 Pearl street, handles the business in New York district.

Jantz & Leist Electric Company, Cincinnati, Ohio, illustrate their motor generators for electroplating, galvanizing, etc. They are built in sizes from 400 to 6,000 ampere capacity, in one or three voltage machines, arranged for adjustable voltage from two to six volts or higher, giving practically an even voltage for all changes of load. Their catalog "M. G." and full details will be sent on request.

The Tolhurst Machine Works, Troy, N. Y., will send circular "C-1" describing the Tolhurst metal dryer and brightener to those who are interested in the drying of metal goods after plating. They have a list of customers who are using their apparatus that includes scores of well-known concerns. Their advertisement in this issue contains a strong testimonial from a prominent metal goods manufacturer.

The Klauder-Weldon Dyeing Machine Company, Amsterdam, N. Y., manufacturers of the Acme oblique plating barrel, are sending circulars to the trade calling attention to the special features of their barrel. Some of their claims are: Small lots can be plated in it as successfully as large lots, while in other machines practically a uniform quantity must be carried at all times. There is no metal to take the plate except the goods that are being operated upon. When the connections get heavily loaded with metal the operation can be reversed and the connections used as anodes. In other machines when the connections get loaded (and this is bound to occur) they have to be removed and sold for scrap.

Rockhill & Vietor, 114 John street, New York, who introduced the "Nonesuch" automatic electroplating barrel last year, are now bringing out a new patented carboy rocker which is provided with a stop so that any quantity, large or small, of acid, ammonia or other liquid can be emptied without spilling a drop. Heretofore, carboy rockers have been only moderately successful, but the "Nonesuch," as this new one is called, overcomes the deficiencies of former types and promises to become a very great convenience in any plant where chemicals are used. Rockhill & Vietor report that sales of the "Nonesuch" plating barrel are increasing at a remarkable rate. A number of large concerns who installed single barrels last year are now putting in double barrels. Of all the machines sold, both single and double scarcely any complaints have been received; in fact, according to the company's statement nearly every sale results in other sales.

INFORMATION BUREAU

Any firm intending to buy metals, machinery or supplies, and desiring the names of the various manufacturers and sellers of these products can obtain the desired information by writing to The Metal Industry. Commercial questions are answered by return mail. Our Information Bureau is for the purpose of answering questions of all kinds. Address The Metal Industry, 99 John street, New York.

METAL MARKET REVIEW

New York. June 8, 1911.

COPPER

The London speculative standard copper prices show a net advance for the month of about £1 per ton, spot closing at £55 3s. 9d. against £54 1s. 3d. on May 1. The foreign market ad-

vanced probably on the belief of a copper merger.

In the New York market prices have been lifted about ¼ cent per pound, but at the close the market is about 5 or 10 points below the highest. There has been some buying at the lower levels during the month, but as prices were gradually lifted what little eagerness there was was quickly squelched and the market become dull and easier.

The exports for the month were fairly heavy, amounting to 26,655 tons, making a total so far of 126,570 tons against 105,794 during the same period last year. The figures issued by the Copper Producers' Association showed an increase for the month of April of over 3,000,000 pounds, but against this small increase the foreign stocks continue to decrease. The European statistics, published on the first and fifteenth of each month, show a decrease in the total visible supply on May 1 of 5,450 tons, or over 12,000,000 pounds for the month, and since January 1, 1911 the foreign visible supply has decreased over 25,000,000 pounds. These figures are quite interesting and show, that while America has been scared to death over what the Supreme Court was going to do to Standard Oil and Tobacco, Europe has been taking our Copper freely and at very low prices.

The copper market today is rather firmer again. Lake, quotable at 121/2, Electrolytic, 12.35, and casting brands about 121/4.

TIN.

London speculators are on the rampage again. Spot tin, after opening at £195 5s. in May, prices fluctuated erratically as usual, touching £191 10s., the lowest and closing at £210, the highest, and during June price is going to be still higher. It seems there is a short interest for June tin and prices may be put to almost any level until a settlement is made. The difference between spot and future tin in London is now nearly £25 per ton.

In America the demand has been fairly good, amounting to 3,400 ton, these deliveries are 400 to 600 tons over the estimates made by most of the trade. According to the statistics published on the first of the month the total visible supply was 15,938 tons, against 14,441 tons a month ago.

We have been below the London parity for several weeks and stocks in America have run down; if the price keeps up in London and demand here holds, we are likely to see an active market here and probably much higher prices.

Spot tin today is quotable around 48 cents, while July can be bought at 44 and August at 421/4 cents.

LEAD.

The London price steady at from £12 15s. to £13 5s.

In the New York market price has ruled very steady at from 4.45 to 4.50 New York. In St. Louis prices have ranged from 4.271/2 to 4.221/2, closing dull and easy.

SPELTER

London price a shade higher at £24 10s.

In the New York market prices have fluctuated from 5.55 to 5.50 for carload lots, prompt shipment, while futures have been quoted a few points lower. Market closes at 51/3 New York, East St. Louis around 5.20.

ALUMINUM.

Market is more or less weak and unsettled at 20 cents for round lots 98-99 per cent. pure, against 21 cents a month ago. Small lots, 201/2 to 21 cents.

ANTIMONY.

Prices all round are slightly easier on antimony, Cooksons is lower at 9 cents and Haalletts at 8% cents, but Chinese and Hungarian have declined about 1/2 cent per pound and nothing is heard of the foreign syndicate. Chinese is quoted at 75%, Hungarian grade, 73/4 cents.

SILVER

Prices held very uniform. London closes at 249/16. In New York the official price is 531/4, highest was 531/2 cents and lowest

OUICKSILVER.

Foreign price is lower again at £8 5s. for Rothschilds and £7 15s. for second hands. In New York the wholesale price has been reduced to \$43.00 per flask against \$46.50 a month ago. Jobbing lots \$44.00 to \$44.50.

PLATINUM.

The market is a shade easier again at \$44.50 for hard and \$42.50 for ordinary refined. Irridium is quoted at \$60.00 per ounce.

SHEET METALS.

There has been no change in sheet copper list prices, the market is around 161/2 cents base and wire at 131/4 to 131/2 base. Brass products unchanged.

OLD METALS.

The market has been dull and unsatisfactory, there is a fair export demand, but outside of that there is next to nothing doing.

COPPER PRODUCTION

(Issued by the Copper Producers' Association.)

June 8, 1911.

Stocks of marketable copper of all kinds on	
ail points in the United States, May 1, 19	11 165,555,908
Production of marketable copper in the	
States from all domestic and foreign sour	ces dur-
ing May, 1911	

292.518,452

Deliveries:

For domestic consumption..... 64,543,963 For export 61,978,557

126.522.520

Stocks of marketable copper of all kinds on hand at all points in the United States, June 1, 1911... 165,995,932 Stocks increased during the month of May..... 440,024

MAY MOVEMENTS IN METALS

	_		
Copper.	Highest.	Lowest.	Average.
Lake	12.50	12.25	12.40
Electrolytic		12.00	12.50
Casting		12.00	12.10
Tin		41.70	43.10
LEAD	4.50	4.45	4.50
SPELTER		5.50	5.50
Antimony (Hallett's)		8.90	9.00
SILVER		.53	53.25

WATERBURY AVERAGE

The average price of lake copper per pound as determined monthly at Waterbury, Conn.

1910—Average for year 13.13½. 1911—January, 12½; February, 12¾; March, 12½; April, 12½; May, 12.37½.

INQUIRIES AND OPPORTUNITIES

Under our directory of "Trade Wants" (published each month in the back advertising pages), will be found a number of inquiries and opportunities which, if followed up, are a means of securing business. Our "Trade Want Directory" fills wants of all kinds. See Want Ad. pages.

Metal Prices, June 8, 1911

	per lb.		PRICES OF	SHE	ET	COP	PER	2.				
	ents.			BA	SE P	RICE	. 17	Cent	ta pe	r Lb.	Ne	t.
Duty Free, Manufactured 2½c. per lb.	1250		CES MENTIONED BELOW	7 AR	E F	R Q	UAN	TITI	ES (OF 10	10 I	BE
Lake, carload lots		AND OV	ER.									
Casting, carload lots				40 .	9 1			.00	-	-6 1-	-	-
N—Duty Free.	12.23			sheet.	Ibs.	9	18%	12.75	-		2	
Straits of Malacca, carload lots	48.00				8	25	60°.	0.0	. to	3 . !	2 .	
EAD—Duty Pigs, Bars and Old, 21/2c. per lb.; pipe and	KAOO			E P	25 to x 60.	to .0	\$	0	20	7% to	40	g
sheets, 23/8c. per lb.				84	25 x 6	8 H	12		30 x	H		the
Pig lead, carload lots	4.45			and over x 60 and	30	oz. 18% t t 30 x 60.	or. 1215 et 30 x 6	30.	0 80	30	58	19
PELTER—Duty 13/8c. per lb. Sheets, 15/8c. per lb.		8	IZE OF SHEETS.	0 0	et o	2 of	24 os.	15 neet	13	11 1990	sheet	ght
Western carload lots	5.50			pul	to 64 o	sheet	to s	and 15	and 13 b. sheet	Bud	2 2	3
LUMINUM—Duty Crude, 7c. per lb. Plates, sheets				30		-	r. to	or. an	off. an	of. and 11	D. G.	
bars and rods, 11c. per lb.					0 g.	OE.		8			00	
Small lots	28.00			2	32	8	-	*	22	01		1
100 lb. lots	25.00			Com	te Per	Pound	Over l	Base I	Pries f	er Seft	Сорр	PET
Ton lots	20.00	L 80	Not longer than 72	B086	Base	Bose	Base	1	2	3	6	1
NTIMONY—Duty 1½c. per lb. Cookson's, cask lots, nominal	9.00	wider 30 ins.	inches.		-	-	-	÷	-	-	_	-
Hallett's cask lots	8.85	3 4	Longer than 72 inches. Not longer than 96 inches.	66	44	66	66	1	3	6	9	
Chinese	7.65	Not	Longer than 96 inches.	66	66	66	66	2	6			-
Hungarian grade										-	10	-
ICKEL—Duty Ingot, 6c. per lb. Sheet, strips and wire	6	than 30 but not than 36 iches.	Not longer than 72 inches.	44	44	44	66	2	4	7	10	1
35% ad valorem.		an an	Longer than 72 inches.	4.6	4.6	66	6.6	2	6	9		
Shot, Plaquettes, Ingots, Blocks, according to	4	the bat	Not longer than 96 inches. Longer than 96 inches.	66	-		-		U	-		-
quantity	.60	Wider Ins. wider In	Not longer than 120 inches.		44	44	1	3				1
IANGANESE METAL—Duty 20%	.90	WK	Longer than 120 inches.	6.6	44	1	2					1
Sagnesium Metal-Duty 3 cents per pound and 25%	-		Not longer than 72	6.6	66	1		A	7	10	-	-
ad valorem (100 lb. lots)	1.50	than 36 but not than 48 ches.	inches.			1	2	4	7	10		-
ISMUTH—Duty free	2.10	and the second	Longer than 72 inches. Not longer than 96 inches.	6.6	6.6	1	3	5	8			
ADMIUM—Duty free	.85	ch the	Longer than 96 inches.	6.6	64	2	4	8	-	-		-
CHROMIUM METAL—Duty 25% ad val	.98	Wider Ins.	Not longer than 120 inches.				7	0				-
GOLD—Duty free	e per oz.	W	Longer than 120 inches.	6.6	1	3	6					
SILVER—Duty free	.531/4	m 0	Not longer than 72	66	Bose	1	3	6	11			1
PLATINUM—Duty free	43.00	DO B	inches.	-	-				1.1	-	-	-
QUICKSILVER—Duty 7c. per lb. Price per pound	.67	but not than 60 nches.	Longer than 72 inches. Not longer than 96 inches.	6.6	64	2	4	9				
golek sizvek - Duty 7c. per 10. Trice per pound	.07	P E	Longer than 96 inches.	66	1	3	6					1
Dealers' OLD METALS. D	ealers'	Wider ins.	Not longer than 120 inches.		-	-		-	-	-	-	-
Buying Prices. Selling	g Prices.	B B	Longer than 120 inches.	1	2	4	-					
	nts per lb.	Ette	Not longer than 96 inches.	Bos	1	3	8					
0.75 to 11.00 Heavy Cut Copper 11.75	to 12.00	than but	Longer than 96 inches.	6.6	2			-	-	-		
	to 11.50	Wider t 60 ins. not wi	Not longer than 120 inches						-	-		-
	to 10.75	W So	Longer than 120 inches.	1	3	8						
9.25 to 9.50 Heavy Mach. Comp	10 10.50			1	3	6					1	
	to 7.00	tha but	inches.	-		-			-	-	-	-
5.50 to 5.75 Light Brass	to 8.00	der than ins. but of wider	Longer than 96 Inches. Not longer than 120 inches	. 2	4	7					1	1
	to 9.00	Wid 72 h	Longer than 100 Inches	-		-			-			
3.90 to 4.00 Heavy Lead	to 4.25	-		3	5	7	_		-	-	-	-
	to 4.25	2 98	Not longer than 132 inches.	4	6							
) to 7.50	Wider than 108 ins.	TOCOCO.	-		-	-		-	-	-	-1
) to 13.00	b di	Longer than 132 inches.	5	8							1
	to 17.50	-										
) to 26.00		e longest dimension in any							its le	ngti	à.
20.00 to 23.00 Old Nickel	0 to 26.00	CIRCL	ES, SEGMENTS AND PAT er prices of Sheet Copper a	TER	N SE	Cut	5, ad	froi	e m 3	cents	per	DO
INGOT METALS. Pr	i 11.	COLD	OR HARD ROLLED COR	PER	, 14	OE,	per s	quar	е			
INGOL METALS.	ice per lb.		ot, and heavier, add								**	
Silicon Copper, 10% to 20%according to quantity 28	Cents.	per	OR HARD ROLLED COP						. 2	4.0	4.0	
Silicon Copper, 30% guaranteed " "	38	POLIS	HED COPPER, 20 INCHE	s w	IDE	and	under	r, nd	1-			
Phosphor Copper, 5% " " 19			nce over price for Cold Ro							8.6	44	mq
Phosphor Copper, 10% to 15%,		POLIS	HED COPPER, WIDER TI	HAN	20 II	CHE	8, ad	lvane	e:e			
guaranteed " " 28	3 to 30	ov	er price for Cold Rolled mensions and thickness	Copi	per o	r co	rrespo	ndin	. 2	44	44	4.6
Manganese Copper, 30% " " 30		COLD	ROLLED COPPER, PRE	PAR	ED 8	UITA	BLE	FO	R			
Phosphor Tin " " 34		P	DLISHING, same as Polishe mensions and thickness.	ed Co	pper	of co	rrespo	ondin	g			
Brass Ingot, Yellow " "	3½ to 9½	COLD	ROLLED AND ANNEALS	ED C	OPPE	ER SI	HEET	'S 0	R		•	
Brass Ingot, Red " " 11	to 121/2	Cl	RCLES, same price as Co	ld or	Har	d Ro	lled (Coppe	er			
21601) 21601			COPPER ROD, % inch				er				Bane	. I
Bronze Ingot " " 10		ROHN										
Bronze Ingot	7 to 19		ctangular, Square and Irre							pecial	Pr	ice
Bronze Ingot " " 10	7 to 19 3 to 16									pecial	Pri	ice

Metal Prices, June 8, 1911

PRICES ON BRASS MATERIAL-MILL SHIPMENTS,

In effect May 29, 1911, and until further notice.

Te	customers	who	purchase	less			lbs.	per	year	and	over	5,000	lbs.
					per	year.							

																0		_	-N	et	bas	10	pe	r 11	b. —		
																1	High										onze
Sheet			- 0			 		 0		٠	۰	 	 ۰	 			. 80	0.13	3		8	0.	144	16		\$0	. 15 1/
Wire						 								 	×			.13					145	6			.154
																		.13					151				.161/
Brazed																		.18						-			.20
Open s	eam	21	ah	in	g													.16	14					-			.18
Angles																		.16	196				-				.18
-	-																										

50% discount from all extras as shown in American Brass Manufacturers' Price List No. 8,

NET EXTRAS FOR QUALITY.

Sheet-Extra spring drawing and spinning brass					advance
" -Best spring, drawing and spinning brass	1%c.	6.6	8.6	6.6	44
Wire -Extra spring and brazing wire	14e.	6.6	8.6	4-8	44
" -Best spring and brazing wire			8.6		44

To customers who purchase less than 5,000 lbs. per year.

	Ne	t pase per in.
	High Brass.	Low Brass. Bronze.
Sheet	\$0.14	\$0.15% \$0.17%
Wire	14	.15% .18%
Rod	14	.16% .191/2
Brazed tubing	191/4	.211/4
Open seam tubing	17%	.191/4
Angles and channels, plain	17%	.191/4

5% discount from all extras as shown in American Brass Manufacturers' Price List No. 8.

NET EXTRAS FOR QUALITY.

Sheet —Extra spring drawing and spinning brass " —Best spring, drawing and spinning brass					advance
Wire -Extra spring and brazing wire	14c.	6.6	0.0	66	44
" -Best spring and brazing wire	1c.	6.0	44	6.6	44

BARE COPPER WIRE-CARLOAD LOTS.

13.75c. per 1b. base.

SOLDERING COPPERS.

300 lbs. and over in one order	 per lb.	hase
100 lbs. to 300 lbs. in one order	 56 55	44
Less than 100 lbs. in one order	 44 44	4.6

PRICES FOR SEAMLESS BRASS TUBING.

From 1¼ to 3½ in O. D. Nos. 4 to 13 Stubs' Gauge, 18c. per lb. Seamless Copper Tubing, 21c. per lb.

For other sizes see Manufacturers' List.

PRICES FOR SEAMLESS BRASS TUBING Iron Pipe Sizes.

Iron pipe Sine 34 54 56 56 11 14 15 2 25 3 8 85 4 4 15 5 6
Price per lb. 20 25 20 10 18 18 18 18 18 18 18 18 10 20 22 24 25

PRICE LIST OF IRON LINED TUBING-NOT POLISHED.

			Per 100 feet-
		B	rass. Bronze.
%			\$8 \$9
36		***************************************	8 9
%		***************************************	10 11
%	inch	***************************************	12 13
36	inch		14 15
1	Inch		18 20
136	Inch	*******************	22 24
134	inch	***************************************	25 27
114			32 35
1%			45 48
3			56 60
	Discount 53	5 and 5%.	

PRICES FOR MUNTZ'S METAL AND TOBIN BRONZE.

Munts	's or Yellow	Metal	Sheathing (14" x 48")	14c.	net	base
			Sheathing	16c.	4.6	6.0
4.4	4.6	4.6	Rod	14c.	6.6	44
Tobin	Bronze Rod		*************************	16c.	6.6	0.6
A	bove are for	100 lb	s. or more in one order.			

PLATERS' METALS.

Platers' bar in the rough, 22 1/4 c. net.

German silver platers' bars dependent on the percentage of nickel, quantity and general character of the order.

Platers' metal, so called, is very thin metal not made by the larger mills and for which prices are quoted on application to the manufacturers.

PRICES FOR SHEET BLOCK TIN AND BRITANNIA METAL.

Not over 18 in. in width, not thinner than 23 B. S. Gauge, 2c. above price of pig tin in same quantity.

Not over 35 in. in width, not thinner than 22 B. S. Gauge, 3c. above price of pig tin.

PRICE SHEET FOR SHEET ALUMINUM-B. & S. Gauge.

		Wld								31n.					20in.			
		and	1	ne	lu	dia	g					16in.	18in.	20in.	241n.	30in.	36in.	401m.
										coil								
No.	13 and	hea	vi	er.				0.0	 0	34	34	36	36	36	36	89	39	39
8.6	14									34	34	36	36	36	36	39	39	39
4.6	15									34	34	36	36	36	36	30	39	39
4.4	16									34	34	36	36	36	36	39	39	39
8.6	17									34	34	36	36	36	36	39	39	39
8.6	18									34	34	36	36	36	36	39	39	42
8.6	19								 -	34	34	36	36	36	36	39	40	43
84	20									34	36	36	36	36	38	41	42	44
8.6	21									84	38	38	38	38	40	43	44	50
6.6	22								 -	34	38	38	38	40	40	43	47	51
6.6	23									34	38	38	38	40	40	43	49	52
64	24									34	38	40	42	42	42	45	51	54
84	25									36	39	41	43	43	43	46	53	57
	26		00	000			00	0.0		38	39	42	46	46	46	51	55	61
0.6	27						0 0	0 0		36	40	44	48	48	49	54	58	64
84	00									36	40	46	48	49	49	56	62	67
84	28									38	41	48	50	52	52	61	67	72
	29									38	42	50	52	56	62	60	72	77
44	30									43	47	55	58	63	71	74	77	83
44	31		9.0.					9.9							77	91	90	95
	32		0.0		0.0		0.0			45	49	57	61	69				
44	88									47	51	60	65	73	84	91		110
11	34									50	55	62	70	78	91		110	120
	35										65	70	80	90	100	115	125	0 0
88	36										80	90	100	115	120	135		4.4
6.0	37										104	114	129	144	159	174		
8.6	38								 		124	139	154	169	184	204	**	**
8.6	39										144	164	184	204	224			0.0
8.6	40								 		174	204	224	244			= 0.	6.0

In flat rolled sheets the above prices refer to lengths between 2 and 3 feet. Prices furnished by the manufacturers for wider and narrower sheet. All columns except the first refer to flat rolled sheet. Prices are 100 hs. or more at one time. Less quantities 5c. lb. extra. Charges made for boxing.

PRICE LIST SEAMLESS ALUMINUM TUBING.

STUBS' GAUGE THE STANDARD. SIZES CARRIED IN STOCK. BASE PRICE, 25 Cents per Pound. Outside Diameters.

Stube' Gauge.	Inches.	1 In.	5-16 in.	% in.	15 In.	% In.	% In.	% in.	I in.	11% in.	11% In.	1% in.	2 lus.	21, lns.	3 ins.	31/2 ins.	4 fns.	4% ins.
11.	.120.								27	24			14	20	10	9	16	23
12.	.109.			**		**	**	**	26		**	**	15	**	* *			
14.	.083.												17					
16.	.065.						28	27	27	24	23	21	21	21	21	27	31	57
18.	.049.					33	30	29	28	25	28	26	26		9.0			
20.	.035.			46	39	34	33	32	30	29	30	30	30	31	38	49	58	81
21.	.032.				40													
22.	.028.	138	98	48	42	38	37	35	34			45			0.0			
9.4	0/9/9	188	192	108	88	70	72	62	60	66								

in stock send for Manufacturers' List.

PRICE LIST FOR ALUMINUM ROD AND WIRE.

Price, per lb.... 32 321/2 321/2 33 331/2 34 341/2 35 36 37 38 43 46

PRICE LIST FOR GERMAN SILVER IN SHEETS AND ROLLS.

Per cent.																	D	Pe	T	rie l	ee b.	1	Pe	-													I De	r	le lb	
12		 		 κ,														\$	0).(12	1	16			 						 					1	0	.5	į
13 .	. ,	 		 . ,		ø.				 								-		.!	53	1	17			 						 							.5	ŝ
14 .	. ,	 	. ,	 				,	. ,		,									.!	54	1	18															,	. 6	¢

These prices are for sheets and rolls over 2 inches in width, to and including 8 inches in width and to No. 20, inclusive. American or Brown & Sharpe's Gauge. Prices are for 100 lbs, or more of one size and gauge in one order. Discount 50%.

GERMAN SILVER TUBING.

4	per cent.	to	No.	19,	B.	&	S.	Gauge.	inclusive	\$0.60
6	6.6	0.5		19,		6.0		6.6	44	.70
9	6.6	4.6		19.		4.6		5.6	44	.85
12	6.6	6.6		19.		8.6		6.6	66	1.00
15	4.6	0.6		19,		68		4.6	***	1.15
16	6.6	4.4		19.		6.0		**	44	1.20
18	44	6.6		19.		6.6		44	**	1.30

German Silver Tubing thinner than No. 19 B. & S. Gauge add same advances as for Brazed Brass Tube.

For cutting to special lengths add same advances as for Brazed Brass Tube. Discount 40%.

PRICES OF SHEET SILVER.

Rolled sterling silver .925 fine is sold according to gauge quantity and market conditions. No fixed quotations can be given, as prices range from 2c. below to 6c. above the price of bullion.

Rolled silver anodes .999 fine are quoted at 2c. to 3½c. above the price of

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